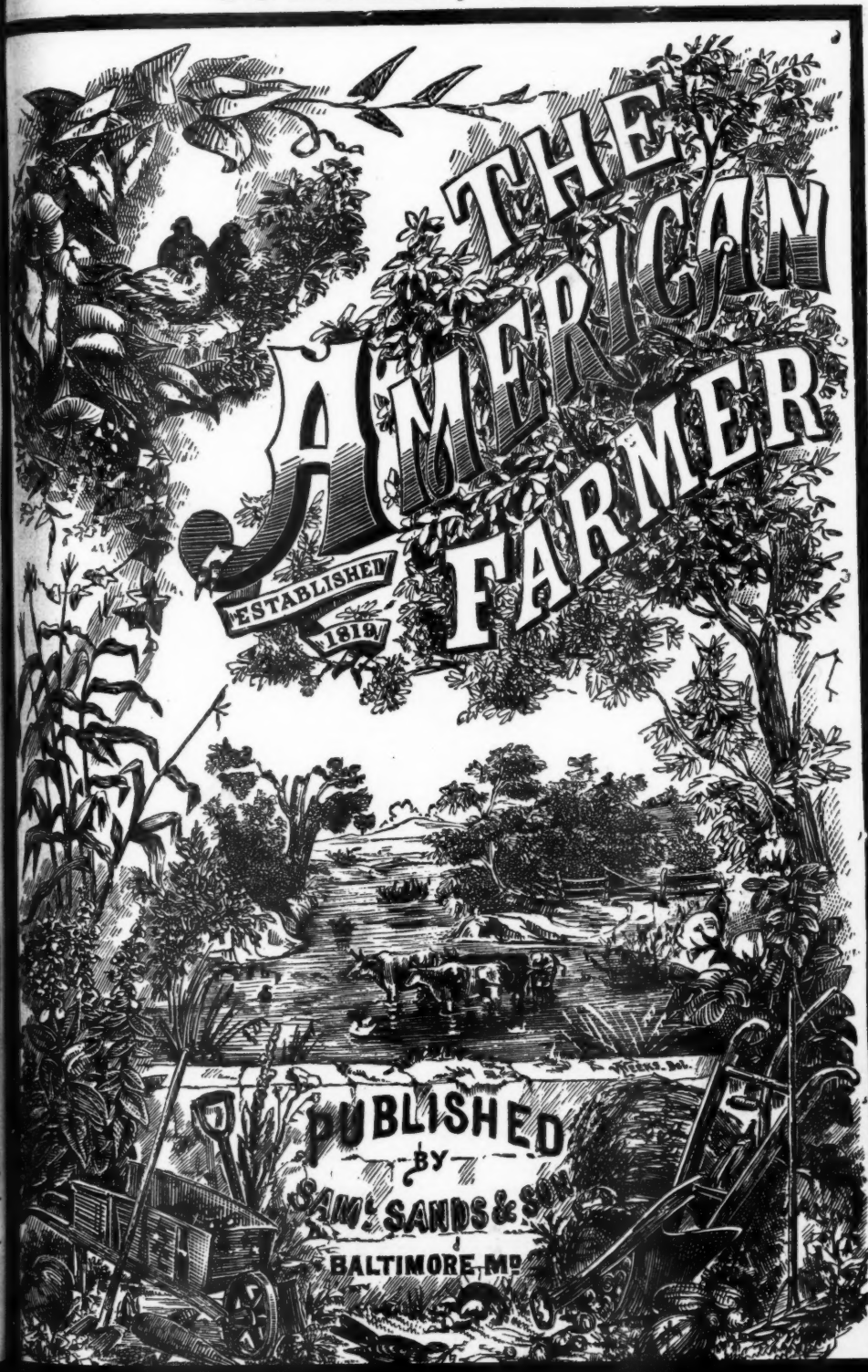
OCTOBER, 1876.



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Inorganic Matter	56.14 per cent.
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Respectfully, etc., P. B. WILSON, *Analytical and Consulting Chemist.*

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THE

AMERICAN FARMER.

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." . . . . . *Virg.*

PUBLISHED BY SAML. SANDS & SON, BALTIMORE, MD.

VOL. V.—No. 10.] OCTOBER, 1876. [NEW SERIES.

Red Clay as a Fertilizer.

Messrs. Editors American Farmer:

Clay is a mixture of silex and alumine, sometimes with lime, magnesia and often with metalic oxydes. It is very diffusible in water, and when mixed not readily subsiding in it. Clay, in poetry and scripture, may express earth in general.

In the proceedings of the spring meeting of the Georgia State Agricultural Society, held in February last, in their discussions in regard to the economy of fertilizers, we noticed as the experience of one of the members, that he had used *red clay* as an article of plant-food with decided success. Although the idea is not new, yet its effects and value when pulverized by frost and mixed with the soil, or used as a top-dressing, cannot be doubted. The experimentist selected a very poor piece of land and manured it by putting a shovel-full of red clay in each hill. In the same field adjoining, he manured a part of the corn with stable manure, in the hills. In going around, at fodder pulling, he took a friend along and told him he was going through a piece of corn manured with different kinds of fertilizers, and wished to see if he could discover any difference. As they approached the rows where the stable manure ended and the red clay began, the friend said: "I see a difference right here." "What is the difference?" was asked. "That is the best." he said, pointing to the red clay corn. This experiment was made on sandy soil with a clay subsoil; and he took the clay out of the field in which the corn was planted. This member intends to experiment in different fields and different years, and report; and if the results are as he expects, he will conclude that his premises abound with stone phosphate.

The subject of fertilizers is of the greatest importance—it constitutes the farmer's capital and it should be his business to manipulate and secure it in bulk at all times and seasons, so that it may be applied to the wants of the different crops in proper condition and in proper time.

Where clay and *muck* can be conveniently obtained, no farmer should fail to secure it in large heaps, and during winter expose it to the pulverizing power of freezing and thawing.

We have not much experience with red clay as a fertilizer, on any soils for cereal crops, but we do know something of the value of common clay in promoting the growth, health and fruitage of the apple and pear tree; an account of which may be seen in the November No. of the *American Farmer*, 1875, page 404.

Red clay has been used by us very successfully as a remedy for the peach-borer. A shovelfull is placed close around the stem at the crown of the roots in early spring, after having ascertained that there are no borers already at work.

We know also, that in digging an ice-house in our orchard two years ago, the young trees adjacent, both apple and peach, were greatly benefited by the red clay thrown out and scattered around; the clay acting as a manure, or as a mulch, or perhaps in both capacities, for the benefit of the trees.

In fruit-culture, red clay might be used to great advantage; and it is sometimes conveniently obtained from digging ice-houses, cellars, and other excavations, and also from banks and rough places convenient to orchards. The peach tree we believe would be especially benefited, as the roots do not object to any reasonable depth of earth over them; and the smothering of weeds and grass by this mulch would essentially lessen the labor of culture; and the clay containing no grass or weed seeds, renders the ground immediately under the trees clean and clear of vegetable intruders.

In setting peach trees we have placed their roots 20 inches below the surface, in clayey soil, without detriment. In fact, they seemed to grow and flourish equally as well, if not better, than those set the usual depth; and in *dry seasons* they get the advantage in growth and luxuriance of foliage. This practice we once believed would kill any small trees.

It is well known that all sandy soils are greatly benefited by manuring with clay, and clayey soils equally as much improved by the use of sand. The only difficulty is the expense of carting; but, if the distance is short, the advantage is still greatly in favor of their application.

We have penned these suggestive remarks on red clay and its uses in agriculture, thinking they might be of some service to the farmer and

fruit-grower; as advantages, both great and small, should not be disregarded by those who would use every means of success. J. FITZ.

Keswick Depot, Albemarle Co., Va.

Gunpowder Agricultural Club.

Messrs. Editors American Farmer:

The Gunpowder Agricultural Club held its last meeting September 2d, 1876, at the residence of T. T. Gorsuch,—A. C. Scott, foreman.

For inspection our host did not lead us beyond the farm buildings. His Berkshire hogs attracted attention, as they deserve,—being models of perfection in regard to those graceful lines of contour so characteristic of this valuable and beautiful breed. He is about adding to his stock some imported specimens.

Half-hour for questions and answers—S. M. Price asked Ed. Scott what condition corn should be in for cutting up; whether dry or green? Mr. E. Scott, in reply, said he supposed the question was put because he has been in favor of cutting green. He has changed his views, however, and thinks now the fodder should be well ripened and the husk turned. Cut green the fodder is apt to mould and the ear too. The fodder also breaks up more than when cut dry. (*q*.) Does cutting up affect the proper maturing of the grain? (*a*.) He thinks the grain will mature better. A piece which he topped early had the grain more injured than one he cut up early. (*q*.) Would it not be better for the grain to do neither? T. T. Gorsuch answered that it would increase the weight of the grain. Dickinson Gorsuch said he had tried that once; he had found the grain not improved by it, and it was a miserable job to gather. Jos. Bosley was of a different opinion; he had no doubt it was the best plan neither to top nor to cut up; the top and root would contribute to the maturing of the grain. The millers say that topping injures the grain, and cutting up still more; checks filling. (*q*.) (Put to Ed. Scott.) Does it lessen the value of fodder for feed to let the stalk get pretty ripe? (*a*.) No. He found no difference in getting stock to eat it. T. T. Gorsuch said the fodder is more brittle when cut green; cut too dry it crumbles; to cut at a medium stage is best.

The question was asked S. M. Price whether in seeding corn ground the land should be plowed (with furrow plow) before drilling? (*a*.) No, it had better not. Two years ago, in his absence from home, part of a corn-field was drilled which had not been plowed. Much of the seed was not covered; he was vexed; he thought there would be no wheat there at all. However, this portion of the field produced a decidedly better crop than the adjoining portion which had been plowed with the furrow plow. He has always failed on corn ground when he plowed with the furrow plow. (*q*.) Is the case the same with rye? (*a*.) Yes; it is better drilled; to get it covered is all that is necessary; the more compact the ground the better it is for the grain.—T. T. Gorsuch thought it best to select seed grain from ground that had not been treated to commercial fertilizers—grain is heavier. S. M. Price—Sometimes they have sown very inferior shrivelled wheat and gotten a good crop. Here supper intervened.

Reorganizing, the programme of the occasion was taken up.

Dickinson Gorsuch read from *Scientific Farmer* No. 2 of "In and Out Papers." It treats of the necessity and method of preparing for the winter in summer—month of August—when the pastures are eaten bare and forage is scarce. "This drouthy time" is bridged over by resorting to fodder corn. It likewise condemns turning out too early on the young grass in the spring and eating down the aftermath in the fall. In commenting Mr. G. said no dairyman should be without summer forage. He had tried broadcasting corn for fodder, but would not do so again. Cattle refused it entirely. Out of a barrack containing from 10 to 12 tons he got out 3. He had been successful with fodder corn drilled by hand. Twelve grains to the foot are enough. At that thickness the stalks will form a small nubbin. He had tried sweet corn as recommended in the article, but it had not proved satisfactory. He worked his fodder corn with the smoothing harrow. If the ground is thoroughly prepared previous to planting, very little cultivation is subsequently needed.

At first it bothered him to cure. He finally fell upon the plan of forming "horses" where needed, by standing between two rows and drawing together and tying what fodder he could gather in the sweep of his arms. He increases the shock gradually by adding successive rounds as the former ones become sufficiently cured. This plan has proved a complete success, and removes the great objection to raising fodder corn; namely, the difficulty of curing and saving it. He has let such shocks stand till Christmas or later without injury to the fodder. In reference to aftermath, he thought it a decided advantage to permit it to grow. He had noticed its benefit on a piece of ground set to timothy, which, on account of its being enclosed with his garden, he could not pasture. He had been manuring it for six years with continuous heavy cropping, until this season, when it fell off a little. He attributed the heavy crops to permitting the aftermath to lie. T. T. Gorsuch said he had found two weeks clear weather not sufficient to cure fodder corn sown broadcast; that drilled by hand he had cured without trouble in ordinary shocks. The last he had raised was planted 2 feet by 2½ on a good piece of ground without manure. He expected to get nubbins, but it gave him 17 barrels to the acre. The variety planted was a prolific corn bearing from three to five ears to the stalk.

Jno. D. Matthews, whose name stood next in the reading class, had selected an article from the *Scientific Farmer* on corn smut. He said if the writer's views are correct the subject is one of vast importance to us. He has an unusual amount of smut on his corn this year. Mr. M. then went on to read his selection and was listened to with deep interest. According to the writer smut is a fungus, and hence a parasite, and propagated by means of spores or the minute bodies which constitute the brownish black powder familiarly known as smut. To prevent its spread the writer advises cutting it out in its early stages and burning.

Mr. Matthews thought seed corn should be selected from that which is smutless. The corn

plant is the most valuable one of all we raise, and unless we arrest the diffusion of this fungus it may prove a serious enemy.

The subject was discussed at considerable length, the prevailing opinion seeming to be that smut appears on corn of rank growth, where the stalks are broken or bruised, or where, from any cause, the sap oozes, and farther that it does not appreciably diminish the crop, one member putting the damage at ½ barrel in 40 acres.

N. R. Miles read from the *American Farmer* an article on "Humus in the Soil," which discusses the difference between humus and mineral fertilizers, contending that according to chemistry "the essential mineral elements of a cord of stable manure amount to only a small part of the whole bulk, yet no practical farmers pretend to say that such a small amount of mineral fertilizers can equal in value a cord of barn manure."

Mr. Miles said he endorsed the views advanced, and considered it better to pay strict attention to making barn-yard manure instead of spending so much money in purchasing commercial fertilizers.

T. T. Gorsuch thought the article one of the most sensible he has ever read; it does not contain a single untruth, but is too sanguine in its conclusions. Humus serves us when fertilizers will fail. The decomposition of humus in the soil sets other operations going, affording moisture in dry seasons,—thus sustaining our crops.

Mixing commercial fertilizers with barn-yard manure in the yard was recommended and was not considered open to objection. The question was asked: Does forest soil contain all the essential elements of plant food? Which led to a discussion in which the affirmative was conceded by most members. As it was by this time late, the programme was interrupted by adjournment.

September 14, 1876. T. G.

The Winter Oat.

In our last we gave some information, derived from a Tennessee correspondent, of the value of the Winter Oat. In the address of Mr. Killebrew, noticed elsewhere, we find the following testimony from that gentleman, upon the same subject:

"I cannot refrain, in this connection, from mentioning the winter oat, which, in our latitude, is destined to add immensely to the profits of stock-raising and dairy husbandry. If sown in September it will bear grazing until the middle of March, and then yield a larger quantity of grain than the spring variety. Upon the farm of Mr. Tom Crutchfield, near Chattanooga, I saw last November one hundred and fifty acres sown with this oat, and never were my eyes gladdened by a more delightful crop. The earth was matted with the rich, rank, dark green herbage, fifteen inches high, looking like a thrifty wheat field in early May. I am satisfied that the amount of grazing which this crop will furnish until the middle of next March, will be equal to that furnished by the same number of acres of the very best clover. This oat is an annual, hardy as rye, springs up after being cropped with more rapidity, and furnishes a larger amount of grazing than wheat, rye, barley, or any other winter-grazing grass. It matures earlier than the common oat by ten days, is not attacked by the fly, and can be seeded at a time when farmers, outside of the tobacco-growing districts, have most leisure. By its aid stock may be carried through the winter for one-half that they can be with regular winter feed. I am satisfied that the cost of keeping sheep through the winter with this oat will not exceed twenty-five cents per head, nor a cow more than two dollars."

Elmira (N. Y.) Farmers' Club.

At the September meeting the following proceedings were had. We copy from the *Homestead*. It will be seen that whilst the orchard grass is well suited to that latitude, the Alfalfa or Lucerne, which is more suitable to the South, was a failure. Several varieties of wheat, new to this quarter, are being tried in New York State:

Several members of the club narrated briefly their experiments with orchard grass, expressing generally the opinion that in favored situations it is valuable in pastures and meadows. Samples of the heads with well-ripened seed raised in Arkansas were submitted for inspection. They were exactly alike other samples gathered in this valley so far as appearance and general character were concerned.

But there were timothy heads from Arkansas unlike the growth here, at least in size. One head measured a little more than twelve inches in length and others were but slightly less. The collection will be placed among the products that adorn the hall, subject to examination by all who have interest in such matters.

The subject of wheat seeding, brought up in the order of experiments, President Hoffman reported his intention to sow a half bushel of the Glock wheat, a new variety originated in Pennsylvania, and a half bushel of Gold Medal seed on alternate strips of land, giving to each the same preparation of the soil and the situation being in the two cases alike,—the object being to make a comparative test. The secretary produced a half bushel of Canada White Wheat to be used for the same purpose and the offer was accepted.

A sample of Grecian wheat reported as having extraordinary whiteness and fineness of its flour was showed, and the Canada White by it. The latter appearing the plumper and whiter grain. The Grecian samples will also be sown and the product compared with other varieties.

G. S. McCann.—Reports of experiments being in order, I may state my experience with Alfalfa. I procured seed and sowed last spring in my garden, on very rich soil, but my success has been poor. When it had made a growth of eight or ten inches I cut it, for I had been told that it needed such treatment. The plants made a second growth, but not higher than before. It is not a success so far.

Charles Heller.—I had some seed which I sowed in the field on wheat. It has made a growth of about a foot in height, but there is nothing very encouraging about it.

G. S. McCann.—The stalks appear very much like white clover when about to blossom. They are woody and apparently without value.

President Hoffman.—We want all the light we can get on this new candidate for favor. My experience has not been such as to encourage further trial. We are told that in suitable soils it is a wonderful forage plant for the excellence and surprising amount of the yield. While it may be true in more favored locations, it is very far from the truth as I have found it. I have been experimenting with it three years. My first trial was with seed sown in the fall on land well fitted, the previous crop being corn. The stubble rows were split by the plow, and the field thoroughly cleaned by plowing and harrowing until brought to a fine tilth. I applied the seed to a sixteenth of an acre, using a garden drill to secure even distribution and suitable covering. It is said that any of our heavy soils, having average fertility, with water ten or fifteen feet below the surface, are suited to Alfalfa or Lucerne—for they are identical. The piece which I sowed had these requisites, so I was led to hope for gratifying success. As the result of that trial I had in the next spring one weak plant. I took it up carefully, and transferred it to my garden, planted in a crock filled with rich mold, but it lingered awhile without growth and then died.

The next trial was with seed sown on oats. It came up sparingly, and all died before making enough growth to develop its character. I was told that the young plants needed careful attention, so I prepared another piece like the first and drilled the seed in as on that. When the plants came I hoed them with great care, but nearly all died, and those which remained did not grow as high as common red clover. I agree with Mr. McCann in his description of the stalks. They are not so succulent as the stalks of common clover. They are dry and hard, without anything to commend them so far as I can ascertain. They do not bear many leaves, nor do they show any qualities which we desire in forage plants. With my experience I must say that I am not disappointed nor deceived, for I did not expect success, but it may save disappointment to others when they learn the results of my experiments. I have only to add that Alfalfa or Lucerne on our soils is an expensive humbug.

In reply to a question as to the results of experiments with new varieties of potatoes, Mr. Harrison, President of the Club, said his had not been successful this year.

Of the several kinds tried but few have repaid the cost. The Nonesuch, a seedling originated by Mr Brownell, in Vermont, has produced fairly, the potatoes having moderate size. The Eureka and Brownell's beauty passably good. The Oatka, from Genesee county, is poor, and Jones No. 4, from the same place, entirely worthless. The Genesee county king gave a fair yield of medium size potatoes. The Royal gave as many as forty potatoes to the hill, all of small size, none good. The Climax has done well. I planted a few last year and more this year. In both seasons they did well, and may be regarded as a promising variety. Compton's Surprise is the greatest failure of all the kinds I have tried. The Peerless has done well for the season, but there is a singular fault in the product. Some of the potatoes are wilted when dug from the hills, as though they had been exposed to the drying influences of the weather.

J. F. Beecher. The fault is not peculiar to that variety. I noticed it in my white Chili's when digging them to-day.

John Bridgeman. It is caused by the very dry season, no doubt. Some of my pumpkins are wilted in the field.

Several of the members spoke of the Durham variety, and considered it as so much like the Early Rose that they were considered as identical.

Orchard Grass.

For years past we have been laboring, as our pages will clearly prove, for the more general introduction of this grass, and we are now beginning to be rewarded, as we have been in the attainment of other objects which have been urged upon the public mind during our control of the pages of the old *Farmer*, with complete success.

We have received a copy of the proceedings of the Tennessee Stockbreeders' Association, held at Nashville, in February last, in which we find a very able address as to the capabilities and characteristics of the State, delivered by the Commissioner of Agriculture, Statistics and Mines, J. B. Killebrew, Esq., from which we copy the following extract, touching one of the grand divisions of Tennessee, and the adaptability of the orchard grass to its soil and climate:

"Passing on to the next division, which may be called the Rimlands, because they form the rim to the great Central Basin, we find a soil wonderfully adapted to the orchard grass; a grass, in my opinion, gentlemen, destined to take the front rank among all the grasses of our latitude. It will bear more grazing, grow with greater rapidity, upon a greater variety of soils, and in more situations; will last longer and bear the tramping of cattle with less injury than any other grass grown in our State. It will resist drought; it will bear an excess of moisture, and, according to Col. Bowman, of Kentucky, will produce more pasturage than the best blue-grass sod upon the best blue-grass lands in Kentucky. When grazed down, it will be ready for re-grazing in half the time required for blue grass. It is less exhaustive than timothy, and will grow in the shade if it can but feel the force of the sun for one hour each day. This grass has always, since its first introduction, been a favorite with English breeders, because it is exceedingly palatable to stock. In my own experience, I know of no grass of so much value upon these Rimlands. Long before clover will do to graze, and long after its succulence is gone, orchard grass, with its green tussocks, will furnish rich grazing. For the Highland Rim it is *the* grazing grass. And it will grow equally well in almost every other part of the State. On the breezy mountain heights, on steep slopes, in nestling coves, in fertile valleys, on sandstone soils, or calcareous loam, in river bottoms, it will

grow and flourish and enliven the landscape with its verdant turf. I mention it more especially with the Highland Rim, because I know of no other perennial grass that can be so much relied upon in that division. Blue grass will grow well in open woods, and I have seen as fine sod as can be found in Kentucky upon the uplands of this division, but unfortunately it will not bear tramping. In the Central Basin, tramping is life to the blue grass. On the Rimlands it is death. And this arises from the difference in the constitution of the subsoils of the two divisions. That of the Central Basin is exceedingly porous, with less alumina in its composition. It needs compacting to give it the proper density. But the subsoil of the best parts of the Rimlands is a deep red clay, exceedingly tenacious, and quickly becomes impervious to water by tramping. Before the land is tramped it is just porous enough for the growth of blue grass; but in its compact state the grass withers and dies, as though stricken by plague. The very best stand may be destroyed in a year or two, by grazing. There is, however, an apparent exception in some old fields where the winter freezes loosen up the subsoil, and where a top-dressing of pulverized limestone is swept by the wind over the surface from neighboring macadamized roads. In the river basins, and in the more fertile parts of Franklin, Coffee, Warren, White, Overton, Jackson, Clay, Macon, Robertson, Montgomery, Cheatham, Dickson, Houston, and Stewart counties, timothy, herd's grass and rye grass will do well until the villainous broom sedge, like a thief in the night, takes possession. Orchard grass, when well set, resists the inroads of this pest longer than any other, and is, therefore, better adapted to this locality. Wherever this grass is grown, almost any kind of stock may be raised. Hogs, mules, cattle, sheep, horses, all eat it with avidity, and prefer it to the richest clover or blue-grass pastures."

A Good Gate.

There are many ways to make a good gate. I send you a description of one I made which has been in use ten years or more, and is yet sound and strong. Anybody can build it with a little help from the blacksmith. The main post to which the gate is hung, is 8 inches square and firmly set in the ground. The other post may be lighter. Oak or red cedar is good enough. For a door yard gate the posts may be smaller, and the gate not so long as those used in the field where loads of hay are to pass through; 10½ or 11 feet for field and 9½ to 10 feet for carriage-way roads is wide enough. For the frame cut the end pieces 3 or 4 inches square and 4 feet long of almost any kind of sound wood; pine is good enough. The bars are 2½ by 4 inches, framed into end pieces, with an inch mortice and tenon, and pinned with half-inch pins. The pickets are 1 by 3 inches for a field gate, or 1 by 2 inches for smaller gates, and securely nailed on the bars. The hooks used in hanging the gate should be ¾ inch square, passing through main post, and secured with screw and nut. For the brace, use an iron rod ¼ inch in diameter with an eye to hook on the upper hook in post. Pass this brace entire through the heel-post of the frame, bend it down to near the bottom on the other end of the gate, passing through the end of the other post of frame, and secure it by screw and nut with a washer, as at that place much of the weight of the gate rests. At the bottom hinge use a common eye with washer in heel-post of frame.

When shut, the end post of the frame at the bottom rests on what I call a "shoe" or piece of thick plank spiked on the foot of the post near the ground, and on which the gate rests when closed. Into the frame post drive a staple on each side; into the post drive two staples, with a hook in each from four to six inches long. The gate thus opens each way, and as it rests on the wooden support at the bottom, where a slight notch is made for the frame post to rest in, there is no sagging or getting out of place by the wind. In any case the gate cannot sag except very slightly, as the iron rod is sufficient to hold all in place. Either one of the hooks at the top keeps the gate in place. A gate of this kind requires less work to keep clear of snow drifts than any other that swings horizontally, as there is no bottom board at the bottom of the pickets. —*Correspondent Country Gentleman.*

Rust-Proof and Winter Grazing Oats.

A Tennessee correspondent, in our last, drew attention to the Winter Oats, grown in that State. In the last *Nashville Rural Sun*, Tom Crutchfield, a correspondent, says: "As much has been said recently through the *Sun* about the rust-proof oat and the winter grazing oat, as I raise both of the oats and have practical experience with each of them, and am satisfied there is no other oat that will at all compare with them in climates and soils suited to them, you will allow me to give your readers that experience.

The red rust-proof oat is from a climate South of this—Georgia and Alabama—where it does admirably and stands the winters well. Its name would indicate that it was rust-proof; with me it has thus far proved so. I do not believe it can be sown with certainty of standing the winters north of latitude 35. Last winter was a very mild winter, yet the cold spell of January materially injured the red rust-proof I had sown, killing it down to the ground. The yield of the red rust-proof is good, the grain very plump and heavy. It is a large, red oat, of very short straw, requiring strong ground. Mine were sown upon ground that yielded over twelve barrels (sixty bushels) of corn to the acre. The corn was cut, the ground deeply turned and the oat harrowed in; they did not grow over two and a half feet high; the heads were heavy and the yield good. It is the oat for rich land and river bottoms.

The red rust-proof ripens about a week earlier than the winter grazing. Mine were harvested on the 11th of June, and the winter grazing on the 19th of June.

The reason why I think the red rust-proof oat cannot be sown with certainty north of latitude 35, is, because of the injury to mine in that latitude last winter, which was a mild one, and the knowledge that they were killed in

January, 1876, near Nashville, a little north of latitude 36, sown alongside of the winter grazing oat and at the same time, while the winter grazing oat was not injured, but matured a fine crop.

The winter grazing oat is from a climate of about latitude 38—Virginia, much colder than any portion of Tennessee. It is an entirely different oat from the red rust-proof, being a large gray, or white oat; very long and exceedingly small, stiff straw; has stood the winters with us as well as wheat; has never been known to be injured by rust; sown upon very rich ground will furnish an immense amount of grazing, but will be very liable to fall on account of its growing so tall. It is better adapted to medium lands. To the farmer whose lands are naturally thin, or have become exhausted by continued cropping, it is indeed a friend; assuring him good winter grazing; by its dense, matted roots protecting his ground from washing and giving him a good yield of grain at harvest.

Grounds naturally sterile or exhausted by careless farming so that they will not grow the red rust-proof high enough to harvest without a mowing machine, will grow the winter grazing oat high enough to be cradled well, and yield a fair crop of grain. The yields of the red rust-proof and winter grazing with me were the same.

Soil suited to any other oat is suited to the winter grazing oat, only if too rich, they are liable to fall from growing too rank.

The better preparation of the soil by deep plowing and thorough pulverization always brings better yields at harvest. I sow from one to one and a half bushels to the acre, the richer the ground the thicker they should be sown. I succeeded in getting a good yield by sowing down in the standing corn in September, 1875, and plowing in with double shovel and one-horse cultivators, gathering the corn in November, and getting the benefit of the gleaning of the corn field as well as the grazing of the oat. Cut the stalks at any time in the winter; when the ground is frozen is the best.

Roman Hyacinths.

Those who wish white Hyacinths early in the winter should not fail to plant the Roman variety. If potted as early as September or October, they will bloom about Christmas. As the bulbs are much smaller than the common hyacinths, three or four should be planted in the same pot. Each bulb sends up two and sometimes three small spikes of flowers. The bells are smaller and thinly set upon the stems, but the color is the purest white, and the whole plant has a delicate graceful appearance.

But its chief merit is its *early* blooming—and for this it is grown in large quantities by florists, who could ill spare its fragrant blossoms during the holidays. As a house-bulb it is always satisfactory, though very few persons realize its value. It is very easily grown, and will have blossomed and faded long before the ordinary hyacinth shows its stately spike.

Correspondence.

Rural Matters from Pretty Near the Beginning.

To the Editors American Famer:

Pastoral and agricultural pursuits start from remote antiquity. Adam and Eve had a fine time in the Garden of Eden; their charge was to dress and keep it. But a change came over the spirit of their dreams, and thence were driven out of it, to till the earth from which they were taken. Most of the ancients were shepherds. Abraham and Lot are spoken of as having many herds; they dissolved partnership, one went to the right and the other to the left. Abraham and Isaac had much to do with cattle, and must also have had to do with grain and fruits, for their bread, &c.

It had been given out that our race must make their living by the sweat of the brow. The Egyptians were tillers of the soil,—for in the times of the seven years of famine, tribes and peoples came from far to obtain the staff of life and the wherewithal to keep soul and body together.

Doubtless, farming then was plain and simple, and implements barely sufficient to answer all purposes. After a while, small vessels were used to carry on the commerce of such nations as engaged in the arts and the production of cereals. It seems they found out the necessity of keeping up the fertility of the soil, by using such substances as would answer as food and stimulants for grain, grass and vegetables. The raising of cattle, sheep and goats, is mentioned; and the first plowing was with oxen, though digging preceded it. In the progress of time, there were wars, and rumors of wars, and the lands of the vanquished were portioned out among the conquerors. Cities and towns were multiplied in the ratio of the wealth of nations. It can be seen that the people in the olden times, whilst they carried on wars, were not unmindful of attending to the sources whence arose the materials of commerce. In those times, men had to work with a will; because the implements of the people were rough and unskilfully made. The harvests were cut by the sickle and scythe, and the grain trodden out by the ox, or threshed with the flail: "Muzzle not the ox that treadeth out the grain." The herdsmen dwelt in tents and the tillers of the soil in huts. So far back, there is little in history about mills turned by wind or water. Here we might say some of those Eastern nations, of considerable antiquity, tilled the soil and were passable agriculturists; the most prominent were the Chinese. Ever since we have known much of the past, there have been innumerable wars and revolutions, which doubtless postponed the advancement of our useful art. The area for operations in many instances were circumscribed. In addition to the mechanical processes, there had to be draining, clearing of the lands and fertilizations. Doubtless, they got into the way of having roads and clumsy vehicles for transportation. Besides roots, they had cereals; paid attention to horticulture and fruit-raising. As we remarked before, they were herdsmen and carried on some traffic of such as-

imals that they obtained. We can fancy that the majority of them then imagined they had brought things to considerable perfection, and that posterity would venerate their memories and perpetuate the uses of their inventions. Those were vain thoughts: changes have been going on and are still in progress. Potatoes, Indian corn and tobacco are productions of more modern times, and have attained to considerable proportions. A great many inventions have succeeded each other and are still in progress, and we felicitate ourselves on the many advantages we enjoy. Our profession is greatly benefited by the spread of manufactures, the progress of the arts and sciences, and the extension of commerce. As the world increases so do its needs. The farmer must be up to the times with his productions,—his horses, cattle, sheep and hogs. I did not mention it in its proper place: the cultivation of the vine and the manufacture of wine; no doubt it was a source of much pleasure to them. We are a step in advance of them; we have various strong drinks made from grain by the process of distillation, and also from various substances. Meantime, there are numbers who condemn the immoderate use of the juice of the grape and other strong drinks. But if the people would only be "moderate in all things," many of the ills which flesh is heir to would be greatly modified and diminished. C.

The Crops in Eastern Virginia.

Messrs. Editors American Farmer:

Your letters of invitation to meet you at the Centennial during the late Fruit Exhibition and the informal session of the U. S. Pomological Society, were duly received, and I regret that professional as well as business engagements did not permit me to be absent from home. Your last letter expressed a desire that I should write something for your pages, in the October issue, and as I have not yet entirely recovered from the disappointment in the sale of our melon, truck, and apple crops of the summer, I feel disposed to say something on that subject.

Few persons I think fully realize what apparently slight circumstances as to *season* at a certain period of time during growth will make or mar the profits of a truck or melon crop. Norfolk city is, as your readers are aware, the receiving (and frequently the selling also) port for shipment north of immense quantities of melons, early fruits and vegetables. The county of Nansemond, of late years, grows hundreds of acres of melons, and the section where the writer resides generally manage to get their first cutting into market and indeed often their whole crop is shipped, before the growers near Norfolk commence cutting. The present year a drouth set us back at least ten days, but did not affect those near the sea and river. The consequence was, therefore, a glutted Norfolk market: both sections coming together with rather inferior ripe melons from our vicinity, and such quantities that transportation north by the steamers could not be obtained. In addition to this, the supplies to northern markets went there faster than they could be consumed. In lieu of sixty or seventy dollars per acre for our melons, many of us did not exceed twenty dollars. Those who planted for the late market and raised large melons, from the influence of the abundant rains in July did well.

Query.—Will it not be better in the future to plant invariably an early and late crop?

What do we observe in the pear market? Here comes a postal from a New York commission merchant: "Ship your pears at once; now selling at $4 to $6 per crate." The few scattering Bartletts (25 boxes) the frost had left me were gathered, assorted, packed in paper-lined boxes and shipped. Captain of river steamer refused $3 50 per crate in Norfolk because he was directed to ship; sold in New York at $3. Now sundry of my neighbors sent a few boxes each a day or so afterwards, *just* as good as mine, possibly not so well assorted or paper-lined, and sold for $1.25 per crate. They would have done much better to have sold at retail to the village people.

The improved facilities for shipping fruits from Florida and California to our northern cities, larger and more mature than ours of the same variety, is telling very severely on the profits of the fruit-growers of the Middle States.

Our summer crop of apples has been large, and so far as selling in market is concerned, has paid nothing beyond the labor and shipping expenses.

To convert them into brandy, as many are doing, when the U. S. tax is paid and an honest account rendered, at present prices of apple brandy, the apples will not yield a profit of ten cents per barrel. Vinegar will or would pay better, but unfortunately the market is limited for cider vinegar since the manufactured article used by everybody comes into conpetition with it.

A week since there was a prospect that those of us who had a hundred or more barrels of winter apples might sell some and make others into winter cider, to be sold in the cities at a fair price. Four days since a furious storm of wind and rain swept over us, blew down the shade trees in our streets so as to render them for a short time impassable, fences and palings were levelled with the earth; late corn, ready to be cut up, had the blades torn in ribbons, and our trees laden with autumn fruits effectually threshed. A few late apples held their fruit; but the Winesaps, Pippins, Fallawaters and October-ripening apples of any size came to the earth. There is no market for them; they must go into cider for vinegar, or to the hogs. Cider made in our climate before frost and steady cold weather very rapidly ferments, forming first alcohol and then acetic acid.

Some of your readers suggest, doubtless,—why not dry the fruit by some of the patent apparatus? Well, it might be done, if one was provided with or could procure *intelligent* labor.

We dispose of a few barrels in the kettle of feed prepared for the hogs, small Irish potatoes, corn, bran and anything in the shape of cabbage or any other refuse vegetables that come handy, every Saturday when the slop is prepared.

The report from the truckers is, that on the whole they have made some money the past season.

The cotton crop of this section is very late opening; so much rain, the plant has made too much weed or growth. The peanut crop in this county is the best we have had for some years.

There has been no want of rain, and the crop is not only forward, but the nuts now hard and no pops. Within ten days more we commence the harvest. The crop is ploughed up with two horses; a long point attached to our ordinary turn-plough without the mould-board runs under the vines, cuts the top root and lifts the plants with the nuts attached. Hands follow, shake free from dirt, collect them in windrows and others stack or shock the vines around stakes about 6 feet high on fence rails raised a few inches from the earth to admit air.

Many of us have prepared our melon compost for the next season. We always like to have it fine and well-rotted. We are cutting Crab grass for hay from early truck patches, and the crop is extra fine on good land. The writer has been so often disappointed in getting a good second crop of clover hay from which to save seed, in consequence of unfavorable seasons, that he is disposed to think the northern and western States need apprehend no competition in the clover-seed trade, from the middle and southern States.

Reports reach me that hog cholera is prevailing to a serious extent in the southern part of our county, adjoining North Carolina. The Agricultural Department did good service in appointing a medical commission to investigate the pathology of Texas cattle fever, and as this subject is not less important, would it not be within your province to call the attention of some one having authority to send the lamp of science to shed some light on the disease, its nature, and probable cause? One poor man last week lost his all, thirty-two in number; the disease spared neither sex or age.

The corn crop all through this tidewater country, on land well cultivated and moderately fertile, is exceptionally fine, and its influence, as you are aware, on the next year's farming operations must be salutary. With a large crop of corn for home use and some to spare, an abundant provision of forage for the winter, everything moves briskly out of winter quarters to the spring campaign, and abundance of manure is provided; the lessons of experience from past failures and successes are carefully studied during the winter nights, and now comes hope for the future, with bright anticipations that better times will come, and now, says the farmer, "I will make larger yields from the same land and produce my money crops at a less expense and better in quality, since by so doing, should prices be low, I can live within my income; and if my family is supported, my children schooled, my store debts paid, my farm improved for the boys that are coming on, contentment at least shall be mine, which the good book says is better than riches."

Yours truly, NANSEMOND.

Suffolk, Va., Sept., 1876.

THE PIEDMONT AGRICULTURAL SOCIETY will hold its Annual Fair on the 17th, 18th 19th and 20th Oct., instant, at Culpeper, Va. The promise is good of a fine show in all departments.

Our French Letter.

Messrs. Editors American Farmer:

French Harvests.

The prospects of French agriculture this year are checkered; if the South has reason to be satisfied with its grain and forage harvest, the vine disease is the terrible shadow falling across the bright picture. From the north of the Loire matters are not at all cheerful; the beet industry, sugar and distillation, is at a stand-still; the oat crop has severely suffered, and a kind of famine is expected in reference to fodder. In Normandy, the rich valley of the Auge is but a part of the Sahara; excepting the trees, all vegetable life has disappeared; the grand oxen peculiar to this part of France wander, with hollow sides, melancholy and resigned, in search of some tuft of dried vegetation that may have escaped the "conflagration." To supply an additional proof of the misery, cattle are now being fed on supplies reserved for the winter. Naturally, farmers, in the impossibility to purchase high-priced forage, and the uselessness of counting upon after-maths and autumn green crops, are gradually selecting the less favored animals in their stables, and sending them to the market. The price of meat will, after a little time, become impossible for even persons at present only able to make the two ends meet.

Preserving Meats.

Happily at this moment, when rump steak costs two francs per pound, the *Frigorifique* has set sail for Paraguay, and expects to return with an experimental cargo of nearly 200 tons of fresh beef, the primest parts of South American oxen, and to be delivered in the central markets of Paris, at ten sous the pound. By the employment of ether and chloride of calcium, a constant temperature below freezing point is maintained in the hold, which will be next to hermetically sealed; the currents of cold air are driven among the joints of meat suspended as in a pantry, by means of special machinery. The steamer is over 460 tons burden, and is expected to make the passage from South America to Rouen in 35 days. If the experiment succeed, steamers will be at once fitted out to bring us mutton and beef from Australia, Texas, and elsewhere. The experiments hitherto conducted with ether, as an antiseptic, or preservative agent, have demonstrated, that beef can be conserved for some fifty days, if not more, in a fresh state, and with but little loss in weight. Something, however, was left to be desired with respect to taste,—a slight defect for those who have to decide between that small draw-back and no meat at all; and it is for this large class that the beef and mutton are to be imported.

Professor Sanson is being taken to task for recommending the consumption of sheep and cattle, killed through suffering from rot or carbuncle. According to the Professor, pustuled meat is not venomous. In Beauce, 178,000 sheep are estimated to die every year of the rot, which, if slaughtered in time, might be converted into food. The food inspectors of Paris reject all such meat, which is ordinarily gorged with blood and putrifies quickly. The animals when affected by the pest, sink so rapidly that not much time is left to seek a butcher to kill them; other

animals die slowly, after being drugged with ether, carbolic acid, spirits of turpentine, &c., all substances rapidly absorbed, and imparting to the flesh a specially disagreeable odor. People will never believe that it is "in the interest of their health to consume diseased meat."

Formerly in the wholesale meat markets it was customary to classify the meat, as it was the product of oxen or cows; this classification is now superseded by the terms, "first and second qualities." The repugnance against cow meat has died out, and now the effort is being made to conquer the prejudice against that of bulls. M. Villeroy maintains that a bull four or five years of age, fat and healthy, is as good for the butcher as an ox; that he finds no difficulty in selling his bulls; that only fine palates could detect the difference of delicacy, and that the general public does not regard the greater redness of color peculiar to bull beef. He does not believe "castration absolutely necessary for the production of fineness of quality in meat;" he sells young rams at the same price as cut sheep, and the greater number of roe-bucks sent to the Paris markets have never been castrated; were cocks to be as carefully fattened as capons, age for age, the difference in their flesh would be but small. The same gentleman recommends, that if castration be resorted to, that for animals intended to be fattened easily after having worked, ought to be performed between the ages of four and six weeks, and by incision; for animals destined specially for draught, between 18 and 24 months is the preferable period; in this case incision ought not to be employed, but the use of two pieces of wood and a screw, gradually being tightened up, till the testacles die from inanition.

Sewage of the Cities.

Experiments have been made on a sandy plain outside the city, with oats raised in soil watered by sewage from the capital and on soil not so watered. The irrigation doubled, as compared with the oats unirrigated, the height of the straw; quadrupled the number of grains, while augmenting by one-third the weight of each grain. The able chemist and experimentalist, M. Grandeau, has been investigating the nutritive value of oats grown in France, Germany, Hungary, Ireland, &c.; he establishes, that Irish black oats were the most nutritive, that there is no connection between the nutritive value of the grain and its weight per bushel; thus, while 22 gallons of Irish oats weighed 16 lbs. less than the same quantity from Poitou, yet they were richer for feeding purposes; hence, a "feed" by measure can be not only defective but uneconomical.

Experiments with Fertilizers.

The agricultural society of Pas-de-Calais devotes a large portion of its funds to direct experiments with seeds and manures, and in different soils. It has just terminated a series of trials of various chemical manures—nitrate of soda, sulphate of ammonia, phosphate, common salt, chloride of potassium, &c., applied to potatoes. The results are, that there is no advantage in employing manures to an excess, the increased expense not being compensated by a corresponding increase in produce; that sulphate of ammonia appears preferable to nitrate of soda as a source of ammonia; that phosphates augmented the yield, but that common salt, on the contrary, diminished it.

Agricultural Implements.

The centrifugal pump is coming into very general use for irrigating purposes, and will be employed this autumn for flooding vineyards, the sole remedy efficacious against the phylloxera. Also, the three-share or "polysock" plow, has become quite a favorite in the case of soils already tilled; it can turn over three furrows simultaneously, each nine inches wide and five deep. Foreign manufacturers cannot overflood the French market with agricultural machinery; once establish the utility of an implement and it will be accepted as a necessity; nay, more, foreigners can pick up at the same time many useful suggestions and ideas, by observing the ingenious combinations of home fabricants. The latter are rapidly making up lee way, for the progress in French farming within the past fifteen years has been very rapid; the farmers are rich and thrifty, and in no country do banks come more to their aid, if solicited.

Agricultural Schools.

One of the best features about farm schools is, that while they exhibit new systems of culture or improved practices, they make a profit at the same time. The school of St. Remy, in the department of the upper Saône, consists of 100 acres, and has produced a net cash profit on the year's transactions of francs 33,000, of which one-third were on account of stock alone. The director of this establishment adopts an excellent plan of hiring all new agricultural implements from the manufacturer, and sub-hiring them to his neighbors. The cost of transport is borne by each party, to and from Paris. The friends of agricultural education are delighted that the legislature has voted francs 130,000 to re-establish the "Agronomical Institute" originally founded in 1848, arbitrarily suppressed by the Empire in 1852. The high scientific and technical instruction in agricultural economy will be given in the same building as the School of Mines and Trades, so that no facilities will be wanting to perfect the students.

The Vine Diseases, &c.

The vine bug continues to make new progress, and its invasion of all the vineyards in France appears to be merely a question of time. Agriculturists are becoming consternated; there is no effectual remedy but the Faucon process of flooding the vines for two months in autumn, and generously manuring them in the spring. Next in efficacy is the employment of sulphuret of carbon, by planting cubes of wood steeped in this chemical preparation, and driving them into the soil, close to the stem of the plant. As misfortunes never come singly, the reports as to the adulteration of wine are becoming alarming. The latest gigantic fraud is to employ fuschine, a notorious poison, to color the wine and also to disguise the flavor of water. There is one consolation, viz: that chemistry discovers as quickly, easy means for detecting the adulteration.

Those gardeners who have manured their fruit trees this season will not regret their trouble. In the cider districts of Normandy, the apple trees so treated have a vigorous air, and the fruit

is juicy and well attached; in the opposite case, the leaves are shrivelled and the fruit has prematurely fallen.

The alkaline wash employed to refine oils has been found to be a capital agent for destroying insects, especially the wire worm, and at the same time it nourishes the plants watered with it. Respecting watering, chloride of calcium dissolved in water, has been much used at Rouen for watering the streets; it not only keeps them cool for a very long period, but laid the dust effectually, and acted as a disinfectant.

The programme for the agricultural section of the exhibition of 1878 is very advanced, and it is said will display several important new features.

Paris, August 24, 1876. F. C.

Live Stock.

The Profit of Sheep-Raising.

Elsewhere we have given an extract from a very able address of Mr. Killebrew, Commissioner of Agriculture, &c., of Tennessee, upon the importance of raising the best grasses for live stock in that State. From the same address we also copy the views of the Commissioner upon the great profits of sheep-raising, premising that the same results which he claims for Tennessee are also applicable to the States of Maryland, East and West Virginia, and North Carolina. Mr. K. says that with all the natural advantages of the State for sheep-raising, there is not wool enough grown there even to clothe its own population, and adds:

"From a careful estimate I find we have only one sheep to every two persons, while we should have at least four sheep to every person. This could be done without taxing our capabilities for wool-growing, and without interfering in the least with other branches of husbandry. By doing this, we should not only have wool enough for the consumption of our own people, but with a proper attention to the selection of animals, we should be able to export each year over twelve millions of pounds, to say nothing of the value of mutton sheep.

Well, does sheep-raising pay? I have before me a statement made by Mr. Tom Crutchfield, of East Tennessee, who is extensively engaged in sheep raising. This gentleman, in 1864, bought twenty scrub ewes, and bred them to one of Scott's improved Kentucky (Merino) bucks. His females of this cross were bred to a pure Cotswold buck, and he has continued to breed the improved ewes to Cotswold bucks, culling the flocks, and disposing of the older ewes annually. In 1870 he bought some pure bred-Cotswold ewes, and bred them and their offspring to pure Cotswold bucks, which, he says, are not now, either in carcass or wool, superior to those bred originally from the scrub and Merino. Here is his sheep account:

Dr.		
Cost of bucks since 1864	$220	
Cost of ewes	135—	$350
Cr.		
20 sheep (original stock) sold at $3	60	
40 grade Merinos, sold at $5	200	
Grade Cotswold and Mutton	1,000	
50 buck lambs at $10	500	
	$1,760	
Wool account for five years only	1,500	
Sheep on hand at market value	860	
Two Cotswold bucks	75—	$4,195
Deduct original cost	350	
Deduct cost of keeping an average of 75 head of sheep for ten years at $2 per head per year	1,500—	$1,150
Leaving net profit		—$2,345

Or an average of 67 per cent. per annum on original cost.

Is there any other business through a period of ten years will average 67 per cent.? Gentlemen, it is a strange anomaly that we complain of hard times and a want of profitable employment, when there are fifteen million acres of land in the State suited to wool growing, that are lying idle and unproductive, and which may be made to yield 67 per cent.

G. T. Allman, of Marshall county, states that at his last clipping his Cotswolds averaged 10 pounds 2 ounces each, for which he got 40 cents per pound. Average value of wool per head, $4.05. Keeping per year he puts at $3, which is about twice as much as usual. Value of wool above expense of keeping, per head, $1. He thinks, however, that the manure will fully repay the cost of keeping. One hundred healthy ewes (Cotswold,) well cared for, will average one hundred and fifty lambs per year.

The scrub sheep of our State will bring, for mutton, from two to three dollars, and will yield from two to three pounds of wool each. They will average about eighty lambs for every one hundred ewes. The cost of keeping such sheep upon highland pasturage does not exceed twenty-five cents per head per annum.

Major Campbell Brown, famous as a stock breeder, and who occupies one of the sunniest and loveliest farms in this or any other State, in answer to some questions propounded by me, states that his profit on sheep for the past year was one hundred per cent. on investment. This profit, however, is exceptional, and was the result of the stimulus given to sheep-raising in consequence of the passage of the law for the encouragement of wool-growing. Everywhere throughout the State the good effects of this law are felt. In a few more years, under its protective influence, Tennessee will equal Ohio or New York as a wool-producing State. Gentlemen, there are 213,110 dogs in the State list for taxes, and no one knows how many more not given in. This mighty host might be called the poor man's enemy, for it raises the price of his meat and his clothes. You should rally around this law. Get up petitions to counteract the effect of petitions that will be made from the other side. There are, I am ashamed to say, demagogues enough in this State who, to obtain positions of trust and honor, will pander to the lowest prejudices and passions of the ignorant, and who would sacrifice the best interests of the State to secure a temporary popularity. The good of the State, and the prosperity of its citizens, are

of minor consideration with such a class. Gentlemen, you who have to bear the burdens of the State Government have a right to demand of that government protection for your property. A government that will not afford such protection is unworthy the support and confidence of the people; it is a government that discourages industry and supports idleness—a government that would rather punish criminals than prevent crime, and a government founded upon the lowest instincts of man. A popularity that rests upon injustice cannot last. It cannot last because it injures the very class from which the whiff of popularity comes. The wind which wafts these pigmy politicians into power will prove, in the end, a hurricane which shall sweep them into a merited oblivion. We want legislators with backbone enough to do right. Here is where the honor lies. Honor and popularity are by no means synonymous. And here is the difference between a statesman and a demagogue—the first moves on to a given point, despite the counter-currents, and succeeds in elevating and benefiting his constituents; the other, like a cockle-shell, is drifted by every current, turned by every wind, without influence, without end, without aim, a drifting wreck, steered by no chart but ruling prejudice and passion, and guided by no compass except his own personal ambition. True and lasting popularity in the end goes with statesmanship. The great misfortune is that only a few have faith enough in their ability to wait for this durable popularity. Your dearest interests are bound up in this law. In my opinion, if kept in force, it will be productive of more wealth to the State than all the laws passed by all the General Assemblies since the war. We ought to sell more wool in proportion to population, than any other State in the Union.

But to proceed with the statistics: The average gross returns on investment of this gentleman in sheep have been 66⅔ per cent. Cost of keeping per head annually, $1.50. The wool, he estimates, will pay for keeping the sheep, and the lambs are clear profit. If this be true, the wool can be grown (dividing cost proportionately between it and the lambs) at below ten cents per pound. Average price of lambs, grade and scrub, $2.60 per head, which he estimates costs four cents per pound net, or two cents gross. His sales will average ninety lambs for every one hundred ewes; yield of wool, four and a half pounds per head; price of mutton sheep, good grades, five to eight dollars; lambs, grade, four to five dollars. Mutton sheep about half these prices.

Sheep and lambs are now from many points shipped by the car-load to New York and other Northern markets, and Southdowns are finding increased favor with sheep-growers on this account. Grade Cotswolds are nearly as good. The true Cotswold and Leicester have many admirers, and are extensively bred in certain localities. The Shropshire Downs have been tried in East Tennessee, and in the Central Basin, and have given great satisfaction; but they are now too dear to be generally introduced.

Sheep in the Central Basin and in the valley of East Tennessee require no feeding in winter when upon good grass, barley, wheat or rye, except during the few days when the ground is covered with snow. But few diseases attack them in any portion of the State. Grub in the head, and hydrocephalus sometimes, in the Central Basin, attack a few sheep; but these diseases are sporadic in character, and are not contagious or epizootic.

There is one important fact which, if properly acted upon, would add greatly to the profits of sheep-raising in this State. Our lambs, averaging the State over, are two months earlier than they are in Western New York and Ohio, and quite a month in advance of those in Central Kentucky. This will enable our breeders to put them upon a bare market, and thus command for them the highest prices. There is throughout the civilized world a growing demand for the flesh of the sheep. It is healthier than pork and cheaper than beef. This growing demand will, in time, cause great vessels to be built for transporting sheep across the ocean; and the time will come, if we be true to ourselves, when a considerable part of Europe will feed upon Tennessee mutton, and be clothed with Tennessee wool. Every effort should be made to encourage this branch of stock-breeding in our State. The climate suits it; the undulating character of the surface suits it; the millions of acres covered with wild grasses invite it; the preservation of the soil, that mother of all industries, exacts it; the financial condition of our people requires it; the credit of the State, and our good name, demand it.

The wool crop of California in 1874 was worth nearly twelve millions of dollars. The statement is now made, that it will reach fully fifty million dollars for 1876. Now, there is no part of California better adapted to wool-growing than Tennessee. Why, gentlemen, away up among the green hills of Vermont, sheep and wool are standard productions. Wool is the staple crop; and it is said in 1852–3–4, that this little State sold more wool than any other equal area in the world. Her average for three decades has been ten pounds for each inhabitant; ours, one and a half pounds. For every square mile in 1850 and 1860, she had 115 sheep. And though the number has been reduced, the quantity of wool remains the same; the quality of the sheep having been greatly improved, thus reducing the cost and increasing the profits. For the three past decades we have had less than 20 sheep to the square mile. The State tax of Vermont is one dollar, and ours is forty cents on the hundred dollars; and yet, with all our boasted capabilities and boundless resources and possibilities, we hear more complaint about taxes than we hear from almost any other people in the world. The truth is, gentlemen, taxes are burdensome just in proportion as the amount necessary for support approaches one's income. To one who has but five dollars left after supporting his family, a tax of five dollars would be exceedingly burdensome; much more so than a tax of one hundred dollars would be to a man with a surplus of five hundred dollars. How to increase our productiveness, is the question we are called upon to solve; and until this is done, we may expect to hear of hard times, and of a growing poverty amongst our people. We must utilize our natural forces, and grass is one o-

these, and sheep the machine to utilize it. We must raise stock; more of it, and of a better quality. By doing this we shall cause millions of acres to yield a profit, that are now an expense to the owners.

Stable Affairs.

A correspondent writes of these as follows to the *National Live Stock Journal:*

The stable is the natural, or more properly the artificial, abode and essential protection of the horse. He cannot thrive and keep in good working order without shelter from the storms, good food, and a clean, comfortable-bedded stall, where he can lie down and rest his wearied limbs. It is impossible to keep the horse in good health without the light of the sun and the pure air of heaven circulating through well-ventilated stables. Stables for horses that have fast work should have high windows, so that the draft or current of air may blow over their heads. If suffered to strike the body or limbs it might injure the over-heated animal, brought in dripping with sweat. The horse cannot breathe the same air over and over again without impairing his health. The air that the horse expires is entirely different from that which he inhales; the atmospheric air he inhales, which passes through the lungs into the blood and promotes the arterial circulation, is composed largely of oxygen, or vital air, while that which he expires is heavily charged with carbonic acid gas, a deadly poison, unfit for respiration. This gas often causes the death of working men engaged in cleaning out old unused wells. It is evident that this gas should be cleansed from the stable as fast as breathed, to prevent its mixing with the surrounding atmosphere. Clean stables and pure air promote health, and large, well-bedded stalls furnish comfort and repose to the tired horse. The wide stall is a luxury, and ought to be six or even ten feet wide, if room can be spared. Loose boxes are important for horses of great value; in such stalls they can get perfect repose by changing their position, recover from the fatigue of a hard day's drive, and be ready for their task the next day.

The food best adapted to the horse is oats and hay of the best quality, occasionally varied with a bran mash, with turnips or carrots as an alterative. The growth and development of bone and muscle depends greatly upon the food they eat. It is important to select such as contains all the elements needed to form the bone and muscle of the horse. It is self-evident that the nutritive matter supplied by the food must be equal to the exhaustion, or natural waste of the body, to keep up condition.

Professor Playfair has made some interesting and instructive experiments upon the nutritious matter contained in different kinds of food. He has demonstrated by analysis, "that in 100 lbs. of oats, eleven pounds represent the quantity of gluten wherewith flesh is formed, and that an equal weight of hay affords 8 lbs. of similar substance. Both hay and oats contain about 68 per cent. of unazotised matter, identical with fat, of which it must be observed that a vast portion passes off from the animal without being assimilated. By this calculation it appears, that if a horse consumes daily four feeds of oats and 10 lbs. of hay, the nutriment which he derives will be equivalent to about 1 lb. 11 ozs. of muscle, and 13¼ lbs. of superfluous matter, which, exclusive of water, nearly approximates the exhaustion of the system by perspiration and the various evacuations."

The horse that is about to be driven on a journey needs hardening by exercise—preparing by sweating out the body to purify and increase the circulation of the blood, and also by hand-rubbing the legs to make them firm and elastic—a preparation in some degree corresponding with that attained by a horse that is daily driven on the road for ordinary work. For one week previous to the start they need daily exercise, commencing with eight or ten miles, and gradually increasing to twenty per day. This exercise, with appropriate food, will harden their muscles, strengthen their limbs and prepare them to perform their tasks without giving out on the road, materially declining in flesh, or seriously exhausting their physical powers. If we perform long drives, with horses accustomed to short work only, the sudden transition from indolence to great exertion will relax their muscles, weaken their joints, depress their spirits and break down their constitutions. The leading cause of so many valuable horses being spoiled by long drives, is from being short of work. They are not prepared for such severe exertions. Condition will prepare them to perform their work cheerfully, last out with sound limbs, and preserve their constitutional vigor for future usefulness.

Stabling Cows the Year Round.

The great question among farmers is how to derive the greatest amount of profit from that noble animal, the cow, which, of all animals, is the most neglected for health and comfort. My remarks will be alike applicable to the village man with his one cow, or the farmer with his herd of five, ten, or fifty. Is it beneficial for the cow, after she is milked at night, to turn her out in the field again? I say it is not; for the reason that all she gets is injurious to her health: for all the poisonous atmosphere, called dew, that falls on the grass is taken into the stomach, and then she has to lie down on it and the cold wet ground. The result is that nine out of ten have the scours in the morning, and are turned out the next night, and so through the season, to take this poisonous stuff into their stomachs, that should be left on the grass to make it grow, and the cow in the stable chewing her food that she has eaten through the day; then, in the morning, she will be ready to commence her day's work with a good appetite. But you farmers may say the cow must eat nights, as in hot days she will lie in the shade. If observation and experience are of any value, they teach that cows stabled nights will eat all day, and what they eat is then free from all poisonous dews and in its most perfect state for the stomach of the cow, who is ready when returned to the stable at night, after being milked, to lie down and give a larger mess of milk, leave two or three hard droppings for the

manure pile, instead of it being scattered all over the stable, as is the case when they lay out nights—or left in the field to create flies, worms, and bugs to annoy them as they come near it, and eat the manure which is lost from the 1st of May to the 1st of November. Six months cows lay out nights, and during this time each cow will make two good loads of manure, worth to any farmer $3 per load, to apply on his farm,—for if I pay $1 per load in the city, and draw it eight miles, it costs me $3, and then is not half as good. Twenty loads of manure which you would get from your cows by stabling would make a fair top-dressing for two acres fall wheat, or four acres meadow worth $60. "From little acorns big oaks grow."

If farmers generally would save their manure by stabling their cows, they would not have to discuss the question how to enrich their farms, but would find their farms enriched, and their cows improved in condition also. I mentioned the fact of flies eating sores on cows. In the fall of 1870 many cows were sore from shoulder to hoof, and, if I mistake not, some died from the effects. Now, flies annoy the cows from 5 or 6 o'clock P. M. till 9 or ten o'clock at night; hence, if stabled at 6 o'clock, and the stable well ventilated, they are free from their annoyance. And another saving: the boy or hired man and dog have not got to get up at 4 o'clock A. M. and begin their rounds to find the cows,—some here, some there, some in the woods, and some off in that other lot,—till more than one-half day's work is gone, and fifty cents gone in the bargain for his work.—*Chautauqua Farmer.*

Poultry Yard.

Raising Poultry.

From a paper read before the Towanda (Pa.) Grange, by Gen. G. W. Patton, and published in the Elmira *Husbandman*, we make the following extracts:

Notwithstanding the opinions of eminent naturalists to the contrary, I believe that there have been numerous, separate and distinct creations of them in different regions of the habitable globe, corresponding with the animal creation from that of man, inclusive, down to the lowest type of creation in the animal kingdom.

It is well known that different countries have their peculiar breeds, which generally take their names from the places they inhabit, or from which they were imported, or from some peculiar appendage, formation or characteristic of them; as the Dorkings from Dorking, in England; the Houdains, (pronounced Houdans) from Houdain, in France; the Black Spanish, or, as they are called—everlasting layers—from Spain; the Polands, from Poland; the Shanghais, from Shanghai, in China; the Buff and the Partridge Cochin Chinas, from Cochin China; the Siberian or Russian fowls from Russia; the Malays or Chittagongs, from the Malay Islands; the Javas, from the Island of Java; the Columbians, from Columbia, in South America; the Barbarys, from Barbary; the Dutch fowls, or every-day layers, from Holland—so named from their persistency in laying and disinclination to set; the Bolton grays and bays, from Bolton, in England; the former known also as Chitteprats (or Cheteprats) or Moonies; the Sussex fowls, from Sussex county, in England; Guelders, from the Province of Guelderland, in Holland, and from Belgium; the frizzled fowls, from Java and Eastern Asia; the Shakebag, sometimes called Shakbag, or Duke of Leeds fowl—a large parti-colored fowl with a black crest, supposed to be a cross with a game fowl. They were celebrated fighters, and were carried in bags to cock-pits, where their owners shook the bag containing them as a banter to the owners of the other fighting fowls, and hence they were nicknamed Shakebags. The negro fowl, from Africa—distinguished for its black comb, wattles, skin, bones and feathers, though the flesh is white and tender, but being ungainly in appearance, and without profitable qualities, a cross between it and other fowls is deteriorating, and hence they are not desirable inmates in the poultry yard; the barn-yard, or dunghill fowls are the offspring of promiscuous crossings of the Malay, Dorking, Poland, Spanish and other fowls. Doctor Bechstein enumerated eight distinct varieties of them, viz: the small-combed, the crowned, silver-colored, slate-blue, chamois-colored, ermine-like, widow, with tear-like spots on a black ground, fire and stone-colored. Crossings with more recently-imported breeds have added to those varieties. The Dominique, or Dominico fowls, are supposed to be from the Island of Dominicia, in the West Indies, but are ranked with our native breeds and are superior breeders; Leghorns, from Leghorn in Italy; Creve Cœurs, from France; silky fowls, from China and Japan—remarkable for the silky texture of their plumage; Hamburgs, from Hamburg, in Germany, with a number of varieties including gold and silver pencilled Hamburgs; Brahmas, or Brahma Pootras, from Asia—named after the Brahma Pootra or Burampooter river there; pheasant fowls, or pheasant Malay fowls, from the Malay Islands, are said to be a cross between the pheasant of the woods and the domestic fowl, but never reach a second generation; creepers, a very small variety of the bantams, with short legs; the creepy is probably a cross with the Siberian or Russian fowl, which has also short-legs; the jumper, mentioned by Buffon, is another of those diminutive races, and are so short legged that they are compelled to progress by jumping instead of stepping. Rumpkins, or tailless fowls, are supposed to be a distinct species, and are acknowledged to have descended from the wild breed of Ceylon.

In summing up the qualities of the several breeds, the writer remarks:

Upon the whole I have come to the conclusion that as our common native breeds, in particular the Dominics, are both healthy and hardy, require less food and care, and their flesh is more delicate, than larger ones, and as their chickens come to maturity the same season of their incubation, they are, upon the whole, the most productive and profitable fowls we have.

Fowls are carniverous as well as graniverous, and require animal as well as vegetable food. In winter, or when cooped, give them refuse meat

twice a week, and occasionally lights, or a beef or hog's liver, suspended above them but within their reach. Buckwheat is the best grain to make them lay; and boiled vegetables are good also. Slacked lime in some form or other to form egg-shells, is indispensable for laying hens. Sand to wallow in and plenty of clean water to drink, and a clean coop are also essential. Hen lice and minute hen spiders are a great annoyance to fowls, and besides keeping them poor they interrupt incubation. The application of unguentum to the naked parts of their bodies, will kill the lice and spiders, but may injure or destroy the hens also, if exposed to the wet or rain. A safer remedy is to take the hay or straw from their nests and burn it; drive the fowls out of the hen house and close it up as tight as possible; put a pound of roll brimstone in an iron vessel; heat a piece of iron, about a pound in weight, red hot, and put it into the iron vessel with the brimstone, and let it remain there to fumigate the hen house, about two hours; then open and ventilate the hen house; and then dissolve a pound of potash in a quart of hot water, and with an old paint or scrubbing brush or rag, paint or wash all parts of the hen house and roosts and nests; then get a quart of kerosene oil and go through the same operation with it; then put fresh straw or hay in the nests, and after that the hens and the coop will be rid of the pests.

Horticulture.

Pear Culture.

At the Sept. meeting of the Potomac Fruit-Growers' Association, according to appointment, Mr. John Saul, Nurseryman, of Washington, D. C., offered the following remarks on Pear Culture:

During the many years I have been engaged in horticulture in the District—now over a quarter of a century—I have been astonished to observe the little attention given to the cultivation of this delicious and profitable fruit. True, a few good cultivators have taken it in hand, but they are, indeed, few when the many should be so occupied. The pear is one of the most delicious, wholesome and valuable of fruits, and, I would add, much more easily grown, more productive as well as more remunerative in our region than any other hardy fruit, not excepting the apple or peach. It has been my fortune to see this valuable fruit growing in some of its favored climes, such as the Isle of Wight, the Channel islands, (Guernsey and Jersey,) long celebrated for their pears, and well-known pear districts in our own favored land. Although I have seen very beautiful and productive trees and fine fruit, I have never seen any to approach in beauty and symmetry of tree, productiveness, large fruit, fair and finely formed, richly colored, and delicious as I have seen grown in this city.

The trees and fruit I am alluding to were grown by our esteemed fellow-member, Prof. Wm Saunders, in the garden of the Department of Agriculture, when on 4½ street. Other gentlemen present may have had the pleasure of seeing that pear orchard when in perfection. It was a pleasure to any lover of beautiful fruit to gaze on it. From this illustration and my own and other persons' success, I feel no hesitation in saying that our favored latitude, embracing District of Columbia, Maryland, and the Potomac region, is unsurpassed, perhaps unequaled on the globe, for the cultivation of the pear.

RULES FOR CULTIVATION.

I shall now pass to the cultivation of the pear. On this I shall say but little. The whole subject is so simple that any person of ordinary intelligence cannot fail of success by observing a few simple rules. It will succeed in nearly any soil in the District, the portion of Maryland adjoining, or the Potomac valley; but it prefers a firm loam on a cool clay but dry sub-soil. On such soils I have had pears strike their roots down three or four feet into a hard, tenacious clay. I have in my nursery a piece of very tenacious clay, so binding that, if handled in a wet or unfavorable time, it will pack as hard as brick. It must be watched—plowed or cultivated the very day it is fit. On this hard soil I have grown, without the aid of manure or any commercial fertilizer, some of the finest standard pears. I have at the present time growing on such soil a patch of pears which for vigor or beauty

CANNOT BE SURPASSED,

A smile always arising when I hear persons assert that pears cannot be successfully raised in this section. With a suitable soil and the proper kind of vigorous stocks, as good pear trees can be raised in this section as in western New York, or in any country. I have such growing at this time. Very sandy soil, such as prevails in many parts of New Jersey, are unsuitable; hence the want of success there with this fruit.

Cultivators frequently inquire,

WHAT SHALL WE PLANT?

standards or dwarfs? To which I answer, that each sort are valuable in their way. Were I cultivating fruit for market I would grow both; dwarfs, however, in less quantities than the other. Some varieties, it is well known, succeed admirably as dwarfs; such as Duchess d'Angouleme, Beurre Superfin, Howell, Kirtland, &c. They come early into bearing and last many years, if properly managed. I have trees in perfect vigor, full twenty years planted, and I see no reason why they should not last as long again, if cared for and meet with no accident.

When a suitable piece of ground is selected it should be deeply plowed and subsoiled. If the land is in good order I would give little or no fertilizers at the time, preferring to give such afterwards, as the trees advance in growth, and I see they require such—then given in the shape of top dressing, for which I prefer well-rotted manure, and when such cannot be obtained, rough or crushed bone, which I prefer for trees to meal or flour of bone.

12x12 feet is a good distance between dwarf pears, though my young orchard is 10x10 feet.—I have some planted 10x6 feet apart, and they have succeeded admirably. This last distance, however, I consider too close. In planting, holes 3 feet in diameter by 1½ feet in depth are sufficiently large, and in the case of dwarfs plant-

ing sufficiently deep to cover the point of union of pear and quince two or three inches. Two years is the best age to plant. Such trees have been headed back in the nursery when one year old to about two feet, and were generally well branched. When planted all branches should be well shortened back. For two or three years after planting I shorten back moderately and regulate the heads; but once the heads are fairly formed, I prune no more, but adopt the practice so well illustrated by Prof. Saunders, in the orchard I have already alluded to.

Standards I would manage in precisely the same way as dwarfs,

HEADING DOWN

when one year old to two feet, and keeping the trees well feathered with branches from the ground. These branches protect the stem from the rays of the sun. Growers must have observed that the stems of pear trees, when exposed to the direct rays of the sun, are generally burned on the south side. I have trees 20 years old, well branched, on which not a particle of blistered or sun-burned bark can be seen.

I cultivate, and keep the ground around my trees well worked until they are fairly in bearing, when I set down in grass. The grass should, however, be kept cut close, and when trees need any assistance they should have it in the shape of a good top-dressing. Occasionally, when the grass gets luxuriant, strong or matted, which it will get from the frequent top-dressing, I have it spaded down around the trees during winter. All this grass fiber, when rotted, is of immense value to the trees, and is the very finest of fertilizers.

WHAT VARIETIES TO CULTIVATE.

As a nurseryman, I find it necessary to have fruiting specimens of all varieties. If an amateur, I should grow quite a collection. Their cultivation is very interesting, and as pears can be had in perfection a great part of the year, they are both useful and remunerative. But, as a fruit-grower for market, my varieties would be more limited, though not so limited as some growers make their selections—such as three or four sorts, for example. I would plant the following twelve reliable varieties on quince stocks, which ripen in the order named: Hosenshenck, Kirtland, Beurre Hardy, Beurre Superfin, Duchesse d'Angouleme, Louis Bonne of Jersey, St. Michael the Archangel, Doyenne du Comice, Doyenne Boussock, Howell, Beurre d' Anjou, and Vicar of Winkfield.

VARIETIES FOR STANDARDS.

Clapp's Favorite, Bartlett, Souvenir de Congress, St. Michael the Archangel, Doyenne Boussock, Howell, Fondante de Malines, Sheldon, Beurre d' Anjou, Beurre Clairgeau, Lawrence, and Winter Nelis, making twelve varieties, are the pears I would recommend for our section of country, where standards are preferred.

A New Apple.

Editors American Farmer:

The Nansemond Beauty is a red winter apple, similar in size and appearance to the well-known Winesap, only larger and brighter carmine red. It hangs late and well on the trees, keeping until May with ordinary care; originated in this county, and, as named by our farmers' club, has already been noticed in your columns. Yesterday, the negro nurseryman Hare, who first brought into notice the above apple, paid the writer a visit, and placed on his table about 100 fine fall and winter apples of different kinds blown from his trees by the late storm. The largest apples in the lot were the Gloria Mundi and the *new apple*, which he claims to have been experimenting with by repeated grafting for the past ten years. It is larger than the specimen of Fallawater which he brought, and his report is that the fruit is remarkable for its uniformity in size on the tree. This apple, of course, wants about three weeks of maturity in size, and is rather lighter-colored red than at full growth. The color is brick-dust red, with streaks of brighter red and flesh tints, with a few patches of rough skin, not enough to call it russet. Form roundish, and base very deep and round where the stem is inserted; apex or blossom end is yellowish white in color, also very deep and regularly excavated, as if reamed out. Each of the twenty specimens brought me is larger than any of the Nansemond Beauty or his finest specimens of Winesaps from young trees.

Having fruited this apple for some years, he claims that it is a better keeper than even the Beauty, and as a dessert fruit in mid-winter far excels it in quality. A specimen of the Nansemond Beauty was sent to Mr. Downing, who decided that it was a new fruit to him, and I can say the same in reference to this apple; it is a new variety to me, although I do not claim to be specially well posted on this subject. The farmers' club, which named the "Beauty," has been converted into a grange, and, although your correspondent has been requested to name this apple, he will refer the matter to that body. Hare's Red Winter would be an appropriate name, but I find Mr. Downing describes a Hare, (Watermelon) a large apple from New Jersey entirely different, however, in form and color.

In closing this hasty note, it may not be improper to state that whereas in former years early apples in Virginia, especially tide-water Virginia, were the only kinds that paid a profit to the grower, times appear to be changing, and if we can grow such apples in size, keeping and quality as the two here mentioned, there will be no market for northern-grown apples in the middle and southern States during the winter.

On sundry occasions the writer has seen the nurseryman Hare retailing his Nansemond Beauty on court days in March and April at sixty cents per dozen. The past year he sold several barrels in winter, containing 40 dozen, for ten dollars per barrel. This new apple—Hare's Red Winter—if you choose, has never been propagated outside his small nursery, and the fruit, he says, has never been sold to any one out of the county.

NANSEMOND.

Suffolk, Va., Sept., 1876.

RASPBERRIES—*The Fruit Recorder* commends the following sorts: "Bristol," hardy, very productive, good color, firm texture; "Naomi" and "Philadelphia," well known. The latter has borne 50 bushels on ¼ of an acre, and been shipped over 200 miles to market. "Turner," extremely hardy, fruit large, bright and firm.

Potomac Fruit-Growers.

August Meeting.

Editors American Farmer:

The following were on exhibition: *Apples.*—1, Benoni; 2, Summer Rose; 3, Summer Queen; 4, Red June; 5, Pumpkin Sweet; 6, Sweet Bough; 7, Hagloe; 8, Flushing's Spitzenburg; 9, Ladies' Blush; 10, Maiden's do.; 11, Astrachan Red; 12, Edward; 13, Townsend; 14, Court; 15, Cooper; 16, Blooming Orange; 17, Hawthornden (specially commended as a cooking apple;) 18, Carthouse; 19, William's Favorite; 20, Summer Pearmain; 20, Duchesse d'Oldenburg; 21, Bonum; Transcendent, Red, and White Crabs.

Pears—Beurre Supreme (a French novelty, fully ripe, and excellent,) Jefferson, Mon. des Hons, B. Hamecher, Anderson, Kirtland, Flemish Beauty, Marshal Pelissier, Osband's Summer, Howell, Dearborn's Seedling, Peach, Sheldon, Clapp's Favorite, Elizabeth, Tyson, Seckel, Bartlett.

Peaches—Hale's Early, fully matured.

Grapes—Tallman and Adirondack.

Figs—Brown Ischia.

Whortleberries—A flesh-colored sport.

Flowers—Specimens of the beautiful lilium lanceolatum and double tigridias.

September Meeting.

The following fruits were on the tables:

Apples (fully ripe)—Cooper's Ohio, Maiden's Blush, Baltzley, Summer Pearmain. *Fall Fruit*—17 (above) Yellow Bellefleur, Northern Spy, (splendid specimens, never saw finer in western New York) Graham's White, Red Cheek, Pippin, Porter, Rambo, Smokehouse (the very best for all purposes) Pittsburg Pippin, Jersey Sweet do., Spice, and Fall Strawberry. *Winter Fruit*—Evening Party, Ben Davis, 21, American Russet, Stroder's Birmingham, Wine Sap, York Stripe; do. Imperial, Holston Sweet, Peck's Pleasant, Hubbardston's Nonesuch, Fallawater, Smith's Cidar, Roman Stem, Winter Paradise, Saul's Seedling, Albemarle Pippin, etc.

Pears (fully matured)—Duchesse d'Angoulcme, do. Pitmaston. The following, whose season of maturity is also noted: Jalousie de Fontenay, Vendel, Baronne de Mello, Richards, Howell, Williamson, Parsonage, Buffum, Henri Bivort, Dow, B. Superfin, Kingsessing, Napoleon, B. d'Albert, Louise Bonne de Jersey, St. Ghislain, Des Nonnes, Mériam, Petre, Fondante de Malines, do. de Melo, Jeckel and Laura de Glymes—in September.

Dix, Delices d'Hardenpont de Belgium, B. Clairgeau, Fulton, Chancellor, B. Diel, De Lamartine, Jules Bivort, Colmar d'Autumne de Noveau—in October.

Oswego, Buerre Fondante de Noel—in Novemb.r.

Figue d'Alencon, Easter Beurre, Doyenne d'Hiver d'Alencon, Buerre Sterckman's, Provost, Reading, Columbia, La Cure, Buerre Robin de Langlier, Josephine de Malines, Doyenne Goubault, and Nelis, winter and late keepers.

Peaches—Mary's Choice, Late Red Rareripes, La Grange, Smock's, Fox's Seedlings, President and Crocket's Late.

Grapes—Catawba, Agawam, Clinton, Concord, Cynthiana, Delaware, Diana, Ives, Martha, Maxatawney, Norton's Virginia, Rebecca, Salem, Senesqua and Wilder.

Orange *Quinces* and hard shelled *Almonds.*

Mr. Jno. Saul read an interesting paper on Pear Culture. A synopsis of which will be found elsewhere.] Report for next meeting will be on Pear Blight. G. F. NEEDHAM.

Washington, D. C., 1876.

Sweet-Potato Vine.

This really desirable vine, says the *American Garden*, for the house is a rapid grower and is much more delicate in appearance under house culture than when growing out of doors. Select (the earlier the better) a well-ripened tuber of the Red Nansemond variety—said to be a most vigorous grower—eight or ten inches long and four or five inches in diameter. A dark-colored hyacinth glass is a suitable and pretty holder for the potato, but a common glass fruit-can or small earthen jar will do. Fill the vessel with rain water and stand the potato in the mouth of it, allowing only two or three inches of the potato to go down into the water. Set it in a warm, bright place to sprout, filling up the holder with water as fast as it evaporates. Probably a great many sprouts will start at once or in quick succession; break off all but three or four of these, as your vine will, by so doing, be much longer and more luxuriant. Nothing will now be needed for the perfection of the vine, except to keep the vessel filled with rain water.

Drainage for Pot Plants.

Although drainage may seem a trifling matter for consideration, it is one, says the *Gardener*, which lies at the foundation of all successful plant culture in pots. If not properly provided for, the lack of it will thwart the most careful and correct attention to all other points of culture. It is not so much the quantity of crocks (pieces of broken flower-pots) used, as the way they are placed in the pot, that determines their success. A pot half full of crocks may not be so well drained as one with crocks to the depth of only an inch. In well-ordered gardens where pot plants are grown, there should be three or four different sizes of crocks—say inch, half-inch, and quarter-inch pieces. These pieces of crocks should be as clean as the pots themselves, and free from dust.

Speaking generally, the largest pieces should occupy three-fourths of the drainage space, the remaining fourth being filled with pieces of smaller size. The work is finished by putting some of the smallest on the top and placing over all a layer of dry moss. Fourteen to sixteen-inch pots require three or four inches depth of drainage, while eight to eleven-inch pots require 1½ to 2 inches. The concave side of the crock should be placed down; if put the other way they often pack too closely to carry off the superfluous water.

To prove whether this pot-drainage is or is not a trifling part of plant culture, take two Azaleas, Camellias, or Geraniums; drain the pot for one of them in the careful manner we have

described, and drain the other by tumbling into the bottom of the pot a few large and dirty pieces of crock or brick. Subject both to the same treatment otherwise, and then observe the different results.

We were recently engaged in shifting some Azaleas, the pots of which were properly drained two years since. On turning them out, the crocks fell from the bottom of the balls as clean as on the day they were put in. Their roots were in perfect health. Others there were into the pots of which a few large pieces of crock had been carelessly pitched. A soured mass remained at the bottom, which stuck in the pot, and in which no roots could live.

The Horticultural Exhibition.

The display of our Maryland Horticultural Society in the handsome Academy of Music was probably the most effective in its line of any ever made in this country. The striking groups of plants of beautiful forms and brilliant colors, arranged with much good taste and in great profusion in the main hall, presented, especially in the evening, under the brilliant illumination of the hundreds of gas jets, a scene long to be remembered.

In variety and abundance the Floral Designs far surpassed any former show of the Society, but in consequence of the dull and rainy weather the collections of cut flowers were hardly equal to former displays; and we regret to have to add that the department of fruits and vegetables were both wholly unworthy of a society occupying the ground ours does. While some allowance must be made for the season as affecting the quality of the offerings, the meager number of the deposits cannot but be regarded as a reproach to our practical horticulturists; and a comparison would show many a small county fair this Fall to have far exceeded in every respect the fruit and vegetable show of this city, which claims to be metropolitan, and to be backed by a region unsurpassed in its advantages for producing fine fruits and vegetables.

The attendance on the first day was moderate; and on the second and third, large; but Friday, the fourth day, was a blank one on account of the extremely bad weather, and the same is true of Saturday, during which the show was continued with the view of affording the school children and teachers of Baltimore, engaged through the week, an opportunity of viewing the remarkable display of the products of Flora and Pomona's kingdoms.

The Exhibition was enlivened during the afternoon and evening by music, both vocal and instrumental, and as a refined and instructive place of temporary resort for our citizens was successful and appreciated; though financially the results were materially affected by the inclement weather.

In the character of the exhibits at the shows, plants constantly rise in merit and in the degree evinced of careful culture bestowed; the ornamental structures show, too, a steady progress in æsthetic feeling—the stiff, inharmonious designs of former years having been supplanted by a light and airy mode of treatment, only becoming the use of flowers as decorations. This advance, indeed, was so apparent, that the judges found, as between competing exhibitors, considerable difficulty in awarding the palm of superiority; and one committee (that on plants) reported "that the respective merits of the offerings submitted to their judgment so nearly approximated each other that the duties confided to them were more than usually delicate to be performed, and that their report is made with more than ordinary diffidence on account of the uniformity of quality in the deposits."

When the same emulation producing this result is seen in other branches, a corresponding hopeful condition will, we have no doubt, ensue.

We may here add that the Society's plan of selecting as judges, gentlemen from abroad, who were not apprised as to the ownership of the products they were inspecting, seemed to work to great satisfaction, and, so far as we have heard, their decisions were uniformly acquiesced in as grounded in justice and good taste.

The following are the prizes awarded in the several departments:

PLANTS.

Professional List.—Best 12 distinct plants, $10, A. L. Black; second best do., $6, Archibald Brackenridge; best single specimen plant not variegated, $5, Jas. Pentland; second best do, $3, John Saul, Washington, D. C.; best 12 variegated foliage plants, $10, A. Brackenridge; second best do., $6, John Saul; best single specimen variegated plant, $5, A. L. Black; second best do., $3, John Saul; best 12 caladiums, $6, John Saul; second best do., $4, A. Brackenridge; best 12 coleus, $3, James Pentland; second best do., $4, Charles Hamilton; best 12 ferns, $8, James Pentland; second best do., $6, John Saul; best 6 Lycopodiums and Selaginellas, $5, R. J. Halliday; second best do., $3, A. Brackenridge; best 6 Crotons, $5, John Saul; second best do., $3, James Pentland; best 6 Begonias, $3, John Saul; second best do., $2, James Pentland; best 6 Dracœnas, $6, John Saul; second best do., $4, James Pentland; best 6 Palms, $8, Wm. Fowler, of Johns Hopkins University; second best do., $5, John Feast; best 6 Agaves, $4, A. Brackenridge; best 20 succulent plants, $6, John Feast; for New Plant, not exhibited before at any exhibition of the society, $10, A. Brackenridge; best collection Hardy Evergreens, $8, W. D. Brackenridge.

Amateur List.—Best collection of six distinct plants, $5, W. W. Spence; second best do., $3, R. W. L. Rasin; best single specimen plant, not variegated, $3, Mrs. M. R. Hazlehurst, Ellicott City, Md.; second best do., $2, R. W. L. Rasin; best six variegated foliage plants, $5, R. W. L. Rasin; second best do., $3, W. W. Spence; best single specimen variegated plant, $3, R. W. L. Rasin; second best do., $2, W. W. Spence; best 6 Caladiums, $3, W. W. Spence; second best do., $2, W. H. Perot; best 6 Coleus, $2, W. W. Spence; second best do., $1, Ezra Whitman; best 12 Ferns, $5, R. W. L. Rasin; second best do., $3, W. H. Perot; best 6 Lycopodiums and Selaginellas, $3, R. W. L. Rasin; second best do, $2, W. W. Spence; best 6 Dracænas, $5, R. W. L. Rasin; best 6 Crotons, $5, R. W. L. Rasin; best 6 Begonias, $3, W. W. Spence; second best do., $2, W. H. Perot; best 6 tuberous-rooted do., $3, W. H. Perot; best 6 sub-arborescent do., $3, R. W. L. Rasin; best 6 Palms, $5, R. W. L. Rasin; best 6 Agaves, $4, R. W. L. Rasin; best 12 succulents, $3, Ezra Whitman; for new plant, not exhibited before, $10, R. W. L. Rasin; best 12 China Asters, $3, W. W. Spence; second best do., $2, W. H. Perot; best 3 variegated foliage Geraniums, $2.50, and 3 double do., $2.50, Ezra Whitman; for seedling plant of merit, exhibited for first time, $2, to August Hoen, for seedling Gloxinia.

Amateurs without Gardeners.—Best three Greenhouse Plants, $5, C. H. Pepar; best single specimen plant, $3, Mrs. Capt. E. K. Cooper; best 3 Caladiums, $2, and best 6 Ferns, $3, C. H. Pepar.

CUT FLOWERS.

Professional List.—Best 12 tea Roses, $3, John Saul, Washington, D. C.; second premium on 12 Bourbon Roses, $2, same; second premium on 12 Remontant Roses, $2, same; highly commended, Remontant Roses, A. Paterson, Waverly; 24 Verbenas, second prize, Charles Bucher & Bro., Waverly; best bride's bouquet, $4, John Saul; best bouquet, Ornamental Grasses, $3, Miss Janie Brackenridge, Govanstown; best basket cut flowers, $5, John E. Feast; second best do., $3, R. J. Halliday.

Amateur List.—Best 12 Dahlias, $3, August Hoen; best 12 Pompone Dahlias, $2, August Hoen.

Amateurs without Gardeners.—Best 6 Dahlias, $2, A. Pritchard, U. S. N.; best bouquet Native Grasses, $4, Miss A. D. Martin; second best, $1, Master Will Sands; special premium of $1, Master Willie Feast; best display of Wild Flowers, $2, Master Willie Feast; second best, $1, Miss Juliet Montague.

FLORAL DESIGNS.

Professional.—Best pair hanging baskets, $3, R. J. Halliday; best rustic stand, $5, John E. Feast; best table ornament, $10, R. J. Halliday; second best do., $5, G. Berger; best basket, fruit and flowers, $8, John Cook; best Wardian case, $10, James Pentland.

Amateurs with Gardeners.—Best rustic stand, $3, Ezra Whitman; best ornamental vase, $3, same; best wardian case, $3, W. H. Perot.

Amateurs without Gardeners.—Best hanging basket, $10, and rustic stand, $3, Master R. C. Rasin; best ornamental vase, $3, Mrs. Captain E. K. Cooper; best table design, $3, Miss Juliet Montague.

FRUITS.

Best 12 kinds Apples, $6, Wm. Wilkins; best 20 kinds Pears, $10, John Saul, Washington, D. C; second best do., $6, Wm. Wilkins; best dish Fall Pears, $3, Earnest Hoen; second best do., $2, Rev. C. C. Lancaster; best dish Winter Pears, $3, Wm. Fowler; second best do., $2, Earnest Hoen; best peck Quinces, $3, Dr. John Miller, Talbot Co., Md.; best 6 kinds Native Grapes, $5, John Cook; second best do., $3, Dr. I. D. Thompson; best and largest collection do., $10, John Cook; second best do., $6, Dr. I. D. Thompson; best dish of any variety, $3, Dr. I. D. Thompson; best Native Seedling Grape, raised by exhibitor, $4, John Cook; best 4 varieties Foreign Grapes, 2 bunches each, $6, Mrs. Isabella Brown; second best do, Mrs. John S. Gittings; best single bunch do., $3, Mrs. Isabella Brown; second best do., $2, Mrs. John S. Gittings; best plate of Figs, $2, Wm. Fowler. To R. W. L. Rasin, special commendation for collection of Apples, Pears and Peaches,—the Apples particularly fine.

VEGETABLES.

Best 12 specimens Beets, $2, C. C. Carman; second best do., $1, Andrew Goforth; best 12 specimens Carrots, $2, Andrew Goforth; second best do., $1, Frank E. Corse; best 12 specimens Parsnips, $2, Frank E. Corse; second best do., $1, Andrew Goforth; best 12 specimens Salsify, $2, Andrew Goforth; second best do., $1, F. E. Corse; best peck Onions, $2, C. C. Carman; second best peck, $1, Andrew Goforth; best half bushel Potatoes, $2, Andrew Goforth; second best do., $1, C. C. Carman; best peck Lima Beans, in pod, $2, C. C. Carman; second best do., $1, Andrew Goforth; best peck Snap Beans, $2, C. C. Carman; best 12 specimens Garden Corn, $2, S. N. Hyde; second best do., $1, A. Goforth; best half peck Okra, $1, Chas. Bucher & Bro.; best 6 specimens Egg Plant, for table use, $3, Robt. Halliday; second best do., $2, Frank E. Corse; best peck Tomatoes, $3, S. N. Hyde; second best peck do., $2, C. C. Carman; best 6 specimens Melons, Cantaleupes, $2, C. C. Carman; best 6 specimens Melons, Water, $2, B. F. Grove; best 4 specimens Pumpkins, $2, C. C. Carman; best 6 specimens Squash, for table use, $2, F. E. Corse; second best do., $1, C. C. Carman; best 12 specimens Cucumbers, $2, C. C. Carman; best and largest collection of Vegetables, $8, C. C. Carman; second best do., $6, A. Goforth. To Saml. N. Hyde, Harford Co., Md., special mention for his Golden Trophy and Improved Arlington Tomatoes, and for Dreer's Improved Lima Beans. To Willie Feast, 12 year's old, a prize of $3 for a collection of 14 varieties vegetables, of his own growing. Several Japanese Gourds, deposited by Martin Gillet & Co., were noted by the judges as curious vegetable products.

SPECIAL PREMIUMS.

First Day.—Best Wreath, Cross, Crown and Anchor, in cut Flowers, all white, $30, James Pentland; second best do., $20, R. J. Halliday. For best Design in Cut Flowers, without regard to colors, $30, A. L. Black; second best do, $20, Jno. Edward Feast.

Second Day.—For best display of Floral Work of any Design, not exceeding six feet in height, $50, Miss Nellie Perot; second best do., $30, Jno. Edward Feast; third best do., $20, Gustav Berger; best display of Gladioli, $15, Jno. Edward Feast; best and largest display of Dahlias, $15, Jno. Edward Feast; second best do., $10, John Saul, Washington, D. C.

Third Day.—For best Design, composed of Cut Flowers, Plants or Fruits, or all combined offered by an amateur, $50, R. W. L. Rasin; second best do, $30, Wm. Wilkens; third best do., $20, Miss E. A. Martin, Ellicott City, Md.; best and most artistically arranged loose Bouquet for the table, $15, John Saul; second best do., $10, Miss Janie Brackenridge, Govanstown, Md.; best Vase or Basket, formed of cut Flowers, $20, A. L. Black; second best do., $10, John Saul; best and largest display of cut Flowers, $10, John Saul; second best do., $5, James Pentland. For best and most attractive continuous display during the Exhibition of cut Flowers, Floral Designs, Stands, &c., $50, Jno. Edward Feast; second best do., $30, A. L. Black.

Special commendation was also given Messrs Cromwell & Congdon for a beautiful display of Horticultural Tools; to M. Perine & Sons, for Garden Vases, Flower Pots, &c.; to Southcomb Bros., for wire work for Florists' use.

Floriculture, &c.—October, 1876.

By W. D. BRACKENRIDGE, Florist and Nurseryman, Govanstown, Baltimore county, Md.

We advise those who are admirers of the picturesque in forest scenery to note, as the season progresses, the various tints of color which the foliage of the denizens of the forest present, so as to guide them in selecting individual kinds of trees for lawn planting; and however wide apart and strikingly marked the colors may be, yet in a very small variety of kinds, different shades of color may be found, so that when these are grouped together harmony may prevail. For example, the foliage of the Sour and Sweet Gums assumes a crimson tint; and, passing from these through various kinds of the Oak into the scarlet or soft maple, some of whose leaves are scarlet, others of the same kind pass through the pink shade into the sear and yellow of the Tulip Poplar, Ash and Sugar Maple. And to carry this relish for autumnal shades of color in foliage a little farther, we would advise those having trees with "graceless trunks," to plant against them the Virginia creeper, whose foilage in late fall is of an exceedingly beautiful crimson tint; also to plant the Virginia Trumpet flower, the leaves of which turn yellow, and both of these can be helped by mixing in with them the English and Irish Ivies; and if you admire the feathered songsters and wish to encourage their nestling among the bushes, then plant a few of the Staff vine (Celastris Scandens) whose orange berries are truly beautiful in the fall months. In speaking of beauty in berries, as well as the food they afford to the feathered race in early winter, we would recommend the planting of such shrubs as Rhamnus Caroliniana—bearing red, and Callycarpa Americana—bearing blue berries; and then there are the evergreen Thorns, both of which bear pretty red fruit in great abundance, which the birds will not be long in finding.

Many people entertain the idea, that by planting Ivy against brick and stone walls, that it keeps them damp. Now this is a great mistake; owing to the roots by which it clings to the wall, absorbing the moisture it contains, while the leaves, which cover each other, shed off the rain; and then, under these leaves, such birds as sparrows and wrens find shelter at night; and these ought to be encouraged by every possible means; they it is and their congeners who keep in subjection the numerous kinds of insects which prey upon our fruits, flowers and vegetables; and to woo them to remain about us, we would plant evergreen hedges of Red Cedar or American Arbor-vitæ, and any money spent in this way will ultimately result in both pleasure and profit to the proprietor.

If Tulip, Hyacinth and Lily roots have not yet been planted out, no time should be lost in attending to it, choosing a dry spell of weather for the purpose; there is too much planting done when the ground is in a puddled condition, the effect of which on the growth of both roots and trees is ruinous. Chrysanthemums in the open ground, whose buds are in a backward state, ought to be potted and placed in the greenhouse or cold pit before the frost injures them. After the first sharp frost, cut the tops of Dahlias down to within one foot of the ground, laying the tops over the stocks, to prevent the roots getting frosted before they are ripe, when they should be lifted on a dry day; and after clearing them of all earth, they may be stored away in a cellar or under the stage of the greenhouse. Gladiolus roots should be taken up at the same time,—only their roots must be kept warmer and drier during the winter.

Roads and walks can now be constructed to advantage. We see on many places more roads and walks than are actually necessary; these are often blemishes, and incur much expense in keeping them in creditable repair. All roads should have a curve from centre to side, where gutters should be provided to carry the water off. No water should rest on a road one hour after it has fallen; a road with ten inches of broken stone foundation, covered with ten inches more of strong gravel, intermingled with a little clay to bind it, will, if kept in repair, last for fifty years. A walk made of asphalt, fine gravel and ashes, is very agreeable to walk on, and is easily kept. Walks formed of clean round pebbles are extremely disagreeable to the feet, and one of grass is only endurable in dry weather; therefore we prefer walks formed of asphalt as agreeable to walk on at all seasons.

Transplant shade trees soon after the first frost; it is better to have to strip off any leaves which may cling to the points of the branches than to defer the work later in the season. Moderate-sized trees are preferable to large ones; the former will, in a few years, outgrow the latter, and make handsome specimens. Where the ground is light and dry, it is not too late to transplant the hardier kind of evergreens.

Greenhouse.

It is no token of good management to allow tender-foliaged and succulent plants to remain

long out of doors in wet cold weather; get them under glass early, and water them rather sparingly than otherwise; more plants have been ruined, we believe, under unskillful management in watering, than by any other cause; observe to give air freely in mild weather, in order to harden the plants, so that they may be better able to withstand a long winter; refraining from giving artificial heat as long as possible; to assist in this, the closing up of the house early in the afternoon should be resorted to. Those who cultivate a collection of strictly tropical plants, as Crotons, Cyanophyllums, Sanchezias, with some of the handsome Palms, &c., &c., will require a special house, where a higher temperature and greater humidity will have to be kept than that of the greenhouse; and to farther aid in the proper management of such articles, should be a tan-bed in which to plunge the pots, which acts as a powerful auxiliary; a small space in this house should be set apart for the multiplication of plants by cuttings and sprouting of rare seeds during the winter, for this is the best season in our climate for such work.

Arrange Cacti and other succulents in a dry, warm, light place, but an exception to this treatment should be extended to the Epiphyllums and Phyllocactus sections,—these delighting more in heat, shade and moisture.

Put in cuttings of Verbenas, Heliotropes, Salvias, Alternantheras, Acharanthes, Coleus, &c., and it is prudent to pot a few old plants of each of the kinds you wish to multiply during the winter.

Attend to potting off the young plants of Chinese Primroses, Cinerarias and Calceolarias, sown last month. Sow Geranium seed, so as to get strong plants to bloom early next year. And all plants of Bouvardias and sweet-scented Jasmines from the open ground should be kept shaded until they have formed new roots. A few Persian Lilacs, Spiræas, Deutzias and double-flowered dwarf Almonds, could now be lifted and placed in tubs or pots, and brought into the greenhouse, so as to give flowers during the winter, and Hyacinths meant for the same purpose should be potted in rich light earth, and have the pots covered entirely over with earth or sand in some cool place, until such time as the pots are filled with rootlets, when they should be removed to the greenhouse. W. D. B.

Chestnut Hill Views—No. 1.

Editors American Farmer:

Just within hearing of the roar of the city, yet sufficiently in the country to be lulled to sleep by the voice of the katydid; elevated above the city higher than the top of Washington's monument, yet sheltered from the cold northwest by a grove of grand old oaks and chestnuts, while to the southward the city and the broad Patapsco are in full sight, we claim some pretty views for Chestnut Hill. Still, in these articles, we propose not so much to tell about the views of the distant landscape, though they are grand enough to write much about, but to tell of those nearer views which one is always getting whose occupation leads him into close communion with the beauties of Nature as displayed in flower, fruit and plant. If what we see in these views may induce others to inquire more closely into the cause when we have only time to see the effect and note it, we shall be fully rewarded. There are some queer people even in the neighborhood of Chestnut Hill, as we have lately had reason to observe. Yesterday we drove past a beautiful house, large, roomy and picturesque. Around it were several acres of lawn. That was all. Not a tree, not a shrub nor flower, not even a vine on the several handsome piazzas—literally nothing but an acre or two of land. It was not a new place, or we could have understood it. The house was at least ten years old. And yet in the immediate neighborhood, Florists and Nurserymen are counted by the dozen. This is one of the most remarkable places in Baltimore county. We don't know who lives there and don't wish to, as we think the man who can live in the country with plenty of space about him and not grow a plant of any kind is hardly worth knowing. This is an extreme case, however, as the suburbs of Baltimore abound in beautiful country-seats, where everything rare and handsome in flowers and foliage is lavishly planted and well cared for. One sees, however, very few good examples of carpet and ribbon bedding, which are so popular at the North and in England. The taste here seems to be for allowing plants to develop their individual beauty. Both systems have their excellencies, but we think the best effect is produced by a judicious variety of carpet beds and beds of miscellaneous plants. Some of the prettiest carpet beds we have seen this summer are at the Spring Grove Asylum, near Catonsville. These are on the terrace in front of the buildings, and were planted by the lately deceased gardener to the Institution, Mr. Hall. Their condition at the time of our visit, showed that the present gardener, Mr. Hamilton, well understands his business. Everywhere about Baltimore the influence of our new Horticultural Society can already be plainly traced in the rapid increase in horticultural taste. New greenhouses seem to be the order of the day, and many amateurs are developing rare ability in the culture of fine plants under glass. We refer more particularly to those whose greenhouses are cared for by the proprietor and his family. In one family I know of it is interesting to see the competition between the boys of the household in propagating and growing plants. We know nothing more effectual for keeping boys "out of mischief" than a greenhouse and flower garden.

We have just reached the close of the most severe drought we have known for years. Wells and cisterns all gave out, and, but for the timely rain last night, we poor commercial folks, with thousands of pots to water daily, would surely have lost some of our pets.

What ails the Verbenas around Baltimore? We have not seen a decent bed this summer. Indeed at one fine country-seat near here the Verbena beds, occupying a prominent place on a terrace in front of the beautiful conservatory, are entirely bare, every plant dead. The rust and mildew have played sad havoc with this, one of our finest bedding plants. We think we understand the cause, at least we hope to test our theory the next season, and hope to be

successful, as we are loth to admit that the Verbena can no longer be grown here in its full beauty. The comparatively new Hydrangea Paniculata is now in full beauty, and its immense snow-white heads present a fine appearance in contrast with the green and flowerless spring-blooming shrubs. It is decidedly the finest hardy shrub of recent introduction.

The September number of *The American Farmer* comes to hand while I write, replete with its usual interesting array of matter. Glad to see that your old correspondent, N. F. F., has been using his pen again. I perfectly agree with him as to the value of clean water and elbow grease. No nostrum ever invented for the destruction of the red spider is equal to clear water applied vigorously and frequently with a good syringe. I do not agree with him, however, that it is not a benefit to rest Callas for a short time in summer. We always start ours, however, earlier than is usually done, and now (Sept. 10th,) we have plants showing bloom. Our plan is to dry them off in June and put the pots under cover out of reach of sun and rain. About August first, we shake them out and clean off all the offsets, the smaller of which are sown like seed in shallow boxes. The large bulbs and larger offsets are potted in as small pots as will accommodate them and are set in a shady place and watered with care until growth commences, after which they cannot get too much water. We bloom our largest Callas in six-inch pots; never put them in any larger, as they bloom better when cramped at the root. If N. F. F. can find a pretty free blooming bedding plant with bright blue flowers, he will confer a boon on us all. The nearest approach to a good blue bedder we know of is the Browallia Elata. Some of the dwarf Aguantums do finely in some sections; we know of a plant now growing in this neighborhood that has been a mass of blue flowers all summer, and not more than twenty inches high. For shades of orange and bronze, we esteem Alternanthera Paronycholdes very highly. A very perfect bed or ribbon of it can now be seen at Montebello, the beautiful country-seat of J. W. Garrett, Esq., where Mr. McKenzie has many other fine examples of bedding. For yellow, Tagetes Signata Pumila is good; or the Zinnia Haagrana, which is much more dwarf and less weedy in growth than the ordinary double Zinnia. As to pink Geraniums, we know one or two sorts which we hope, and believe, will surpass as bedders, the sort named, as well as Master Christine. They yet remain to be proved. None of the variegated-leaved Geraniums are reliable as bedders here. Mt. of Snow does well some seasons, but is a failure generally. We had a bed of nearly two hundred of them this summer in a somewhat shaded position, which looked beautiful until the extremely dry weather of August, when they lost most of their foliage and all their beauty. The double scarlet Geranium Sapear Pompier has again done splendidly for us, and we consider it the best scarlet bedding Geranium for bedding of either double or single sorts. This is a broad claim for a *double* Geranium, but we hope to show next summer at Chestnut Hill that we are right. In the line of sub-tropical bedding, I think that with a little effort we can get beyond the everlasting Canna and Caladium which now seem to monopolize all efforts in that direction. Not that we can do without the Cannas and Caladiums, but let us get up a greater variety. Suppose N. F. F. suggest some more varieties of tropical foliage plants easily accessible and easily grown. We have some ideas we hope to put in execution another season, but I am sure that not only I but many more of your readers will be glad to receive suggestions in this line. It just occurs to me that in suggesting blue plants I entirely forgot the new dwarf forms of Delphinum Formosum. We have grown some from seed from Messrs. Carter of London, under the name of Delphinum Bicolor Grandiflorum. The flowers are very large, of the brightest blue, with a white centre. They bloom nearly the whole season.

But enough of this. The pages of the *Farmer* have drawn my eyes away from everything else, and if I read it much further I shall write more than you want. W. F. Massey.

Waverly, Md.

Setting Strawberries in the Fall.

For family use, says the *Fruit Recorder*, where the fruit is wanted next season, they can be set from August to October, if properly planted and cared for, and by being well mulched with hay or straw, yield one-fourth to one-fifth of a crop next season, and make a growth next year of double those set next spring, and consequently a much larger crop the year following.

If the plants are to be ordered from a distance, give the following directions for doing them up: Take up carefully with the whole root, shake off the earth and keep from sun; nip off all leaves and runners; prepare oiled paper to wrap around them; on a sheet of this paper place a thin layer of moss, slightly moistened, and on this put a layer of plants, and then a layer of moss, and then another layer of plants, and so alternate. Then, after putting moss on top of last layer, roll them up together with oiled paper around them, and around this dry paper, leaving package open at leaf end to show what they are. If packed in this way they can be sent in August hundreds—yes, thousands—of miles by mail or express with perfect safety. As soon as the plants are received, untie the string that binds them, and lay in a cool, moist place until ready to plant.

The next important step is to plant right. Having ground well prepared, mark off where rows are to be, by drawing a cord or small rope, and pressing it to the ground. Have rows for gardens eighteen inches to two feet apart, and plant twelve to fifteen inches apart in the rows. Use a common garden trowel for planting. Dig a hole, shake out roots well, and place in the hole. Then pour hole half full of water, and draw in quickly, to earth up. Of course if the weather should be damp, and ground wet, the water is not essential. If the weather should be hot and dry, shade for three or four days with pieces of newspaper or large leaves of any kind, but if thus shaded, don't water too much, as they will "damp off." As soon as they commence to

grow, take off the covering. Never plant on a ridge, but on a level.

If you have an old bed and wish to change it to another place, prepare ground well for the new bed. Then dig holes six to eight inches deep, and eight to nine inches square, and immediately after a heavy rain, when the ground is saturated, take up plants from old bed with a sod of earth large enough to fill the holes in new bed, and after placing them therein, press them down firmly, and work earth around them and over them, partly covering the plants, picking out all grass and weeds. Also, give them a good dressing with well-rotted compost. If you have no strawberries, and desire the fruit next season, or wish some kind to fruit next season that you have not got, be sure to set them now.

Hen Manure in the Garden.

A correspondent of the *American Agriculturist* tells how he uses hen manure, as follows:

One of the best fertilizers within easy reach of the farmer and villager, is the contents of the hennery. This often goes to waste, and the hens find their own lodgings in trees, and on sheds and other outbuildings. But on most farms there is a roost under cover, where the droppings accumulate, and are kept in a dry state. As a rule not much care is bestowed upon it. Often it lies upon the floor without absorbents, the ammonia constantly escaping, to the injury of the fowls. Sometimes it has an annual cleaning, but oftener it lies for years only wasting. Analysis shows it to be exceedingly rich in nitrogen, worth a cent a pound, or more, in the state in which we usually find it. If all its good properties were carefully gathered and saved by the use of absorbents, it would be worth much more than this. There are two ways of doing this, equally effectual—daily sweeping and gathering into barrels or boxes, or by frequent deposits of absorbents under the perches. The former method involves a good deal of labor, and is resorted to only by those who insist upon the utmost neatness in the hen-house. The droppings deposited in the barrels are covered daily with plaster, dry peat or some other good absorbent. Our own method is to apply the absorbents frequently under the roosts. The hennery has a cemented floor, and is built into a bank, fronting on the south, with a large supply of windows to give light and heat. Spring water is brought into the poultry house by a pipe, and by the turning of a faucet a constant supply of fresh water is secured. The whole floor is covered with absorbents of various kinds, in which the fowls scratch and dust themselves as freely as they please. The staple absorbent in summer is dry garden soil or road dust, gathered as the state of the weather permits. In the winter it is sifted hard coal ashes from the furnace. In addition to this, sea weed and the wrack from the shore are frequently thrown in, which furnishes food for the fowls, as well as helps the manure heap. As soon as the smell of ammonia is detected, more earth is added, and thus the pile of manure grows gradually through the year. It is removed as often as manure is wanted in the garden, at planting, or to assist growing crops. It needs to be used with caution, either in the dry or liquid state. We have large faith in the economy of liquid manure, applied to fruits and vegetables in summer. It is very good in dry weather, and not much less in wet, if the soil is well drained. The quantity of water that plants will take up in the growing season is wonderful. We keep a large tank, which is supplied with manure and water from the hennery, and frequently applied to cucumbers, squashes, melons, tomatoes, cabbage, and to grape vines and other small fruits. The liquid manure adds much to the vigor of the plants, and the size and quality of the vegetables and fruits. To those who have never tried it, we think the free use of liquid manure will open a new revelation in gardening. Try it on the flower borders, and on all the growing crops.

RUST IN CELERY.—James Vick, in a number of his *Floral Guide*, says about rust on celery: There are two causes of rust. Celery likes a cool moist situation; and if a trifle shaded, all the better. If it is planted in an open situation exposed to the sun, it sometimes burns, and this causes rust. This, however, is not the most frequent cause. Celery should neither be hoed nor earthed up when moistened with dew or rain, nor when the ground is moist. It should be done when air, and soil, and plant are dry, otherwise rust is sure to be the result. If the soil is permitted between the leaf stalks or in the heart of the plant at earthing up, rust or rot, or both, is the compensation. This is one reason why we dislike celery of a branching habit: the work of earthing well is so difficult. A dwarfish plant of straight, compact growth, is altogether the safest and best.

HEAVES IN HORSES.—In heaves the great point is to correct any faults in feeding, watering and working. Keep the patient in a cool, clean, well-aired stable; feed sound oats or ground feed morning and noon, without any hay or straw, but at night a few pounds of well-cured timothy, or better, straw may be given after the grain; do not put to work for at least an hour after any meal, and let exercise be gentle for the first half hour; never overdrive; if there is any tendency to costiveness give daily two or three ounces of Glauber salts, more or less, as may be necessary to keep them easy. Without such careful management, all other measures will prove unavailing, and this care alone may be sufficient to check the disease in its early stages. A run at grass on a natural pasture, destitute of clover, will often have a similar effect. Finally, the following powder may be given daily for a month or even more: Powdered digitalis, three drachms; powdered gentian, four ounces; powdered coriander seeds, four ounces; arseniate of soda, two drachms. Mix, divide into thirty powders, give one daily in the food.—*New York Tribune.*

MD. FAIRS.—The Carroll Co. (Md.) Agricultural Society will hold its annual Fair at Westminster, Oct. 3–5. The Somerset Fair will be held at Princess Anne, Oct. 4–6. The Alleghany Show will be held at Cumberland, Oct. 10–13.

Agricultural Calendar.

Work for the Month—October.

The in-gathering of the harvests already attained, and the preparation for future crops, fully occupies the attention of the farmer; and the necessity of having everything in readiness for the on-coming of winter, should urge him to the industrious and careful performance of every duty awaiting his hand.

Wheat.—Where not already seeded, no pains should be spared to get the crop in as soon as possible. It is necessary, in such seasons as we usually have, to sow in time to admit of considerable growth during the fall. This growth of the blade establishes and strengthens the root, gives it a chance to tiller better, and invigorates the plant against the attacks of the fly.

The necessity for the earliest sowing should not, however, atone for any lack of thoroughness in preparing the land, which consideration is above all others. Where, from causes unavoidable, or the necessity of the better preparation of the seed-bed, the season of seeding is delayed, the application of some nitrogenous manure is useful. Desirable as we conceive this to be in most cases, it is doubly desirable where the starting of the plantis thus postponed. The stimulating effect of the dressing will give a push to the crop which may make amends for the delay in sowing. A small addition of Peruvian guano, fish manure, or other ammoniacal matter, to the fertilizer intended to be used, or the adoption of one more highly-nitrogenized, is very advisable in the contingency of deferred sowing.

Rye ought to have been sown before this, and where not done it should be gotten in as rapidly as possible. Do your best by the land, and you may find by proper attention to its condition and the use of a little good fertilizer that the crop will turn out more profitable than it sometimes does.

Buckwheat should be cut when about half the seed is ripe, and before severe frost. Put in small stacks, and thresh as soon as possible to avoid the loss by shattering. The addition of a little salt to the straw when it is stacked, keeps it better and makes it more relished by stock. It ought to be carefully saved, as it makes good forage.

Roots and Pumpkins ought all to be stored before frost injures them. Do not allow the roots to be bruised in digging and handling, as decay is thereby superinduced. Potatoes should be dug as soon as the vines are dead, but let the ground be dry when it is done.

Fall Plowing, except on soils very light and porous, is generally admitted to be profitable. The alternations of temperature, with accompanying freezings and thawings, break down the texture of stiff soils and facilitate their working, as well as the better prepare the plant-food they contain for dissolution and assimilation by future crops of plants.

Liming may be done with benefit and to advantage after plowing in the fall and winter. The effects of such application is often seen in the next year's crops. Do not plow lime under.

Muck may often be dug at this time of the year, when the season is dry, at a great advantage. Its usefulness in the stables and barnyard, and to add to the other elements of the compost heap, we have frequently alluded to. With leaves, rough litter, &c., it absorbs the urine and adds to the bulk of the pile.

Draining is a work which may be done very well now if you have any land needing it. See at all times that water furrows are properly laid off in your grain fields and kept clear.

Orchards.—Old orchards should be looked over; the trunks cleaned of mosses and lichens; the dead branches cut away. A whitewashing of the trunks and larger limbs will destroy insects and their eggs. Where orchards have run out, do not neglect to plant new ones. Fruit on the farm pays in every respect; in improving the health of the household, diversifying the products of the farm, and it yields ten-fold its cost of production.

Live Stock.—*Fattening Hogs.*—Have their pens so made that they may be kept dry and comfortable; spread muck and leaves over their floors; and replace them as soon as they are saturated by excrements. Give the hogs when put up, at intervals of two or three days, several doses of sulphur, and afterwards an occasional handful of charcoal or ashes, and lime and salt. Feed soft food at first. Pumpkins and roots are useful; and soft corn, cooked. Cooked meal is the best mode of feeding corn, if it can be so prepared. Put your hogs up as early as practicable. *Beef Cattle* and *Sheep* ought to be pushed ahead as rapidly as possible. *Milch Cows* ought to have a little extra feed as the pastures grow poor; a mess of meal and bran and a little hay will be abundantly repaid. *Young Stock* should begin the winter in good order. Once run down, it is very hard to bring them up again.

Vegetable Garden.

October.—Fork up lightly Asparagus beds, and apply a good dressing of manure. Dig Beets and Carrots before injured by frost, and buried in pits or trenches, or stored in cellars.—Trenches a foot and a half deep and two feet wide, are convenient for keeping roots. Cover lightly with earth, and put it on deeper as the weather grows severer. Dig the trenches where water will not lodge in them. Cauliflowers, not yet headed, may be put in cellars or cold frames where they will head out. Lettuce may be set in frames. Parsnips and Salsify for winter use may be dug; that not needed till spring may remain in the ground. Rhubarb beds may be made. Keep Sprouts and Spinach clean. Turnips and Ruta Bagas should be taken up before severe frost.

VA. FAIRS.—The Shenandoah Valley Fair, at Winchester, will be held Oct. 10–13; the Loudon Co., at Leesburg, Oct. 17–19; the Augusta Co., at Staunton, Oct. 10–13; the Lynchburg Fair, Oct. 24–27; the Piedmont, at Culpeper, Oct. 17–20; the State Fair at Richmond, Oct. 31st, Nov. 3.

The Dairy.

Milking Properties of Ayrshires, Short-horns, and Jerseys.

The Ayrshire breed of cattle owes its celebrity to the wealth of its udder; and the profusion of lacteal secretion of the Ayrshire cow causes her to be regarded more than other members of the bovine race as prominently the dairyman's friend. Mr. Gilbert Murray, indeed, has stated that "there is no breed of cattle in these islands that will produce an equal quantity of milk, butter and cheese from a given quantity of food, with the pure-bred Ayrshire;" but Stephens, in his "Book of the Farm," truly observes that "dairymen in towns prefer Short-horns, having an eye to profit, they being steadier milkers and better feeders." Both statements may be verified, and admit of reconciliation. Short horn cows are larger than Ayrshires, and consume much more food. Many of them are grand milkers, which are usually not the best bred; but the old sort, which have not had their udder improved away, to make them better feeders. There was a time, it must be recollected, when the Short-horn was more of a dairy animal than a grazier, and whenever cultivated as such, no breed has hitherto surpassed it in the large quantities of milk yielded. There have been records, even in modern times, of Short-horn cows giving, in the height of the season, from seven to nine, and even ten gallons of milk per day. We may seek in vain for such results to be surpassed, or even equalled, and it is because they are capable, when well fed, of producing such immense quantities of milk that London dairies are so generally stocked with Short-horns, the owners of which do not regard the enormous bulk of food they consume, so that they continue to fill cans with the commodity, from the sale of which they get their living. But if the assertion of Mr. Gilbert Murray be regarded attentively, it will be seen that he does not pit Ayrshires against all others, only in connection with the food question.

Bell says that Mr. Bates related many incidents he had known of Short-horn cows being large milkers; one of which was, that a cow owned by Mr. C. Colling, in the early part of his career, gave 26½ quarts at a meal. Mr. Bates knew another in the habit of giving 19½ quarts twice a day, which latter was by Masterman's bull, and owned by Mr. Alexander Hall. The cow was the ancestress of R. Colling's Princess tribe, and C. Colling's bull Foljambe. Mr. Wastel had also a cow called Barforth, that yielded 18 quarts of milk each meal, and made 16 lbs. of butter per week, of 24 ozs. to the lb. Mr. Bates never had a cow of his own that gave more than 14 quarts to a meal, the quantity afforded by his first Duchess. Each quart of her milk produced 1¼ ozs. of butter, and her weekly yield of the latter was 14 lbs.

The following is also given by Bell as being stated by Mr. Bates: "I also know that Mr. R. Colling's Bright Eyes, dam of Marske bull, gave 15 quarts of milk each time of milking. The late Mr. Hustler, of Acland, who had Daisy Cow by Favorite, own sister to the Daisy bull I used, matched her as giving more milk when on "fog" in the autumn, against his tenant's cow. On the milk being measured, the latter gave 15½ quarts, and the Daisy cow 16 quarts. Matchem cow, the dam of the Oxford premium cow, never gave less than 12 quarts per meal when on grass after calving."

As to the quantity of milk Ayrshire cows will give when in full profit, Aiton, in his survey of the country, states that some cows have been known to yield as much as 5 or 6 gallons per day; and that although such realizations may be rare, many when in their best plight and well fed will yield 4 gallons per day for three months, and during the season produce something like a total of from 800 to 900 gallons per cow. Aiton was, however, accused by the Ayrshire dairy farmers of underrating the yield of the best cows, and he admitted subsequently that satisfactory proofs had been afforded by Ayrshire milchers producing from 6 to 7 gallons per day as a regular supply for several weeks in succession. At a milking competition held at Ayr, in April, 1861, the greatest yield at a single milking was rather over three gallons, which produced at the rate of 15 lbs. of butter per week. But it is as a cheese-producer far more than for her yield of butter that the Ayrshire cow is renowned. It is well known that there is no sort equal to the Guernsey for yielding a large proportion of cream to milk, but the Ayrshire affords a large quantity of the latter of fair average quality, and it is thus pre-eminently well fitted for general dairy purposes, when her entire produce requires to be utilized either for the manufacture of all best cheese or butter, and skim-milk, or household cheese.

Ayrshires and Jerseys may be compared better, because nearer in size than the former and Short-horns, in consequence of which it is to be presumed the consumption of food would not be very dissimilar. Jersey cows stand in high reputation as large milkers, and there are certain published statements which tend to show that some of them, at least, approach very close in their abundance of lacteal supply to the quantities mentioned by Aiton as having been afforded by famous Ayrshires. In the catalogue of Mr. Walter Gilbey's herd, issued on the occasion of its disposal about thirteen months since, at least half a dozen cows are mentioned as having yielded forty-eight pints of milk per day when in full profit, and two were stated as producers of fifty and fifty-one pints per day respectively. A herd of Jerseys would, no doubt, consume less food than a herd of Ayrshires, and probably, in certain situations and circumstances, might possibly prove equally, if not more, remunerative than Ayrshires in either milk, butter or cheese. This only shows that comparisons are odious. Taking the kingdom generally, probably Mr. Gilbert Murray's dictum may be established, because Ayrshire cows being of a nice medium size and very hardy, would be suitable for the dairies of the largest number of districts, and make better returns than either the larger Short-horns—who are only adapted for milchers either on first-class pastures or in connection with the high-feeding system of towns—or the little Jerseys so fawn-like and beautiful in a

park, but not practically of such value as the Ayrshires on farms generally. It should be borne in mind that Jerseys stand quite as far below Ayrshires as feeders and beef-makers as the latter do to the Short-horns, which, after all, is an element in the matter, as all dairy farmers like to keep animals they can make something of when they get dry and barren.—*Eng. Live Stock Journal.*

The Exhaustiveness of Dairying.

Whether, says Alexander Hyde in the *New York Times*, a pasture is impoverished at a slow or speedy rate depends upon the kind of stock upon it, and the treatment of this stock. Young growing stock exhaust land much more rapidly than old cattle, as the former are making bone and muscle, while the frames of the latter are already built. Pastures grazed for fattening purposes hold out much better than those kept for the dairy business, as the production of fat, being a carbonaceous substance, is not an exhaustive process. Milk, on the contrary, is rich in saline material, and this must come from the soil. The analysis of the ash of a thousand pounds of milk gives on the average the following constituents:

	Pounds.
Phosphate of lime	2.87
Phosphate of magnesia	0.53
Oxide of iron	0.07
Chloride of potassium	1.63
Chloride of sodium	0.29
Free soda	0.44
Total	5.83

The milk of a cow may therefore be calculated to carry off from a pasture some twenty to thirty pounds of these precious salts, and unless they are returned in some form the land must be exhausted sooner or later. No matter how rich a deposit a man may have in the bank, if he makes daily drafts without making new deposits, the cashier will finally tell him that his credit is gone. The soil is the farmer's bank, and cows are continually making checks on this bank. If the soil is rich the checks may be honored for a series of years, but not forever. A continual outgo, with no income, will bring the richest farm and the richest farmer to bankruptcy. This is true of the pasture, no matter what kind of stock is kept. Fat cattle will not bankrupt a pasture as quickly as milch cows, but with every ox or steer sold goes off a greater or less amount of the marrow of the land, and the same is true with every fleece of wool or carcass of mutton exported from the farm. No wonder that our pastures are exhausted that have furnished tons after tons of milk, beef and wool. If they are now overgrown with bushes, weeds, and moss, a bountiful Providence is not to be blamed. The blame lies nearer earth than Heaven. Nature always does her best. If she cannot produce timothy, or red-top, or white clover, for the want of the raw material with which to manufacture these nutritious grasses, she does the next best thing, and grows such herbage as she has the elements to produce.

Making Butter.

We will take it for granted that you have good cows, good pasture, and a good cellar. With these requisites, perfect cleanliness, and proper attention, any woman of good judgment can become a good butter maker, though the quantity of soft, salty grease sold and consumed under the name of butter indicates that this is one of the "lost arts." We frequently read directions for making butter, specifying the kind of pan to be used, depth of milk in pan, length of time milk should stand, etc. These rules may be necessary in a large dairy, but as farmers' wives are usually situated, the observing of them would be difficult at least. Use crocks or pans, as convenient (pressed tin pans holding about six quarts are light and nice, and I think the best,) cooling them before straining the milk. It is impossible to tell just how long milk should stand before skimming, as it depends much on the state of the atmosphere. Probably the best time is just after the milk thickens or curdles.—Stir the cream in the jar thoroughly at least twice a day. You will find it necessary to churn three times a week or oftener. Wash your butter well, and salt to suit the taste. Then set in the coldest corner of the cellar till next morning, when it should be worked again. If intended for present use this is sufficient; but if you wish to keep for a long time, after a few days work again, and yet again, until there is not a suspicion of buttermilk. Then pack it solidly in stone jars. Lay a cloth covered thickly with salt on top of the butter. This excludes the air, and also absorbs any water left in the butter. Be sure, in warm weather, that you choose the coolest part of the day and premises for all these operations, and you will, I hope, succeed in making and packing butter, even in the hot months, that will be good and wholesome.—*Chicago Inter-Ocean.*

The National Agricultural Congress.

The fifth session of this body was held in the Judges' Pavilion, on the Centennial Grounds, on the 12th, 13th and 14th September, with a fair attendance, comprising delegates from more than twenty States and several territories. The meeting was opened by an address of welcome from Dr. Kennedy, President of the Polytechnic College, on behalf of the Philadelphia Society for the Promotion of Agriculture; and Mr. Burnett Landreth, chief of the Bureau of Agriculture of the International Exhibition.

The President of the Congress, Hon. Williard C. Flagg, of Illinois, then read a paper on the past condition and progress of American Agriculture. This admirable address we give elsewhere.

At the subsequent sessions, a number of interesting and valuable papers were presented by their authors, or read by the secretary.

Prof. G. E. Morrow, of the Iowa Agricultural College, and Secretary of the Congress, explained the objects and work of the congress to be the collection and dissemination of information in relation to agriculture in the several States and Territories, and concerning the climate, economi-

cal and other conditions affecting its prosperity and progress.

He also read an address by Joseph Harris, of New York, on the "Outlook of American Agriculture." The paper took a very hopeful view of the prospect, its principal point being that intelligent and good farming rather than legislation is the secret of success.

Hon. J. R. Dodge, statistician of the Department of Agriculture at Washington, read a paper on "agricultural statistics," designed to illustrate the profit of statistics applied daily in all the operations of agriculture, and the necessity, in this age of telegraphs, to include in the range of collection the world of agricultural production and consumption, price, sale, and shipment. It recognized the fact that the statisticians must be practically ubiquitous in locality and instantaneous in celerity, enforced the duty of protecting the husbandman from the toils of the speculator by means of prompt and accurate information, and gave instances of large individual savings by attention to the teaching of statistics. The price of corn, for instance, followed sensitively every change in production—the largest crop known, that of 1875, realizing no more than was realized in "the failure" of 1874, when the product was scarcely two-thirds of that of 1875, and the small percentage of export having scarcely an appreciable effect in any case. On the contrary, a large crop of wheat with a heavy foreign demand may result more advantageously than a moderate yield with good harvests abroad.

The speaker made a practical application of statistics to test the temporary uses of pioneer farming, the value of specialties in agriculture, and the higher value for permanent results of scientific and restorative agriculture.

A paper on Agricultural Literature, by Dr. E. L. Sturtevant, of Massachusetts, in the absence of its author, was read by the secretary. It comprised an historical statement and complete review of National, State, and society publications, with an analysis of the value of many of them. Special elaboration was made of society publications as one of the most effective modes of advancing agricultural progress.

Dr. Thomas P. Janes, Commissioner of Agriculture of Georgia, next addressed the congress upon Agricultural Reform. He said the cry of reform from the farmers of his section, a usually contented and conservative class, was due, among other causes, to mal-administration and official corruption, but mainly to misdirected individual enterprise or speculative farming and a ruinous credit system. He enumerated among the leaks of the farm the injudicious purchase and use of improper fertilizers, the remedy for which was being found in a better knowledge of soil culture and fertilization.

An address was delivered upon the "American Live-stock Interests," by L. F. Allen, of New York. Following the history of the horse from its introduction into the country to the present time, he alluded to every variety and character of beast now on the continent, and the respective merits of each.

Col. T. Claiborne, of Tennessee, delivered an address on Southern agriculture. He stated that the South was the great field of American agriculture, the importance of which could not be overestimated. He alluded in strong terms to the great tracts of land lying waste in the South, and urged immediate immigration.

The speaker recurred to the adaptability of the soils of certain States for the cultivation of rice, wheat, and other cereals, tobacco, cattle, etc.,—giving statistics of the crops in certain sections, and their value. He contended that in Tennessee there would be found cattle, horses, sheep, and hogs, of the purest blood; more money was invested in them than ever before, and the taste for first-class stock increased daily.

Other addresses were delivered by X. A. Willend, on American Dairying; and on the subject of "Agricultural Education," by President Welsh, and Dr. Townsend; the former of the Iowa, the latter of the Ohio Agricultural College. They produced a discussion of some length and animation, which we have not space to follow.

A series of resolutions offered by Mr. C. V. Riley, State Entomologist of Missouri, urging Congress to take some action looking to the investigation by the National Government of the devastation caused by the Rocky Mountain locust scourge, that the evil may be remedied or palliated.

At the last session of the congress, it was determined to hold the meeting for 1877 in Chicago. Hon. W. C Flagg was re-elected president; Horace Smith, of Philadelphia, made secretary; and Ezra Whitman, of Baltimore, treasurer. A vice-president for each State was also chosen,—Wm. B. Sands, editor of the *American Farmer*, being selected for Maryland.

MR. FLAGG'S ADDRESS.

Our agriculture, said the speaker, is peculiar in the fact that it places a large body of civilized inhabitants on the virgin soil of the New World, under a climate very unlike that of the parts of Europe from which our immigration comes. Yet during the two centuries and a half, which we may say in round numbers cover our civilized agricultural history, we may be said to have rapidly run over the usual course of agricultural development. Our progenitors, as in other countries, first commenced to gather the spontaneous products of the forest and flood.—They were fishermen, hunters and woodsmen rather than farmers, just as many of our inhabitants in the wilds of Maine and Oregon are to-day. There succeeded a year of pastoral agriculture, not so well defined in the wooded Atlantic States, but marking a distinct stage in the great prairies of the West and Southwest. During this period the breeding and grazing of cattle, horses, and even sheep and swine, alternated with hunting, fishing and other occupations of the backwoodsmen. We see this going on in Texas, Kansas and Colorado to-day. Next in order, apparently, came a one-idea agriculture in the form of a growing staple, upon which the farmer risked his whole chance of success, and which occupied a small portion only of his time, leaving abundant leisure for more savage pursuits during the rest of the year. This was seen in the tobacco culture of the Atlantic coast, in the early day, and in the cotton culture of the South at a later period. It is seen in a later and modified form in the wheat culture of the Genesee Valley and of the Northwestern and Pacific

States. It has generally proved in the long run exhaustive and impoverishing, and consequently is succeeded by mixed agriculture, in which the farmer seeks a diversity of crops according to his intelligence, and attempts to check the waste of fertility which is going on. Not unfrequently the alternative of abandoning the worn land has been chosen, and real estate declines in price and population diminishes, while the farmer and his family seek fresh fields and pastures new in the Great West. Such is now the condition of parts of New England, Virginia and other States. In a few places only have we reached the point of development known as extensive agriculture and which may be called rather market gardening than strictly agriculture. Our market gardeners and nurserymen seem more and more to shelter themselves and their products under glass, and this again suggests that the violent alternations of our climate may be prevented. At the end of the first century of our national history we find a population of 38,558,371 settled on 1,272 239 square miles. Our population has increased ten-fold, our settled area five or six-fold.

But one-fifth of this vastly increased population lives in cities exceeding eight thousand in population, and the relative number, importance and wealth of the agricultural class has declined, very greatly in New England, comparatively little in the Gulf States. At the last census barely one half of our industrial population was found to be engaged in agriculture, ranging as low as 12 and 13 per cent. in Massachusetts and Rhode Island and as high as 80 and 81 in Mississippi and Arkansas. The "extensive" practice of agriculture limits agriculture to the sparser populations. In New England to-day, coming to details, agriculture in many of its aspects appears to be in a decline. The farms of Massachusetts are increasing in size, and there is a remarkable disappearance of farms of a small size. Throughout New England the sub-division of territorial property appears to have reached nearly its limit. The American population is deserting the farms in the older and more thickly-settled communities, and its place is filled by foreign population of fewer wants and greater economy. Farm lands are selling for less than the cost of the buildings and for less than farms a thousand miles away from the seaboard. This has been the result wrought out more rapidly than elsewhere on the comparatively thin soil of New England. The more fertile soils of New York, New Jersey and Pennsylvania are on the same road, it may be presumed, but have not gone so far. Maryland and Virginia, unequalled in many respects as to climate and commercial advantages, were long plundered and impoverished by a profligate practice of agriculture, and their worn-out farms are deserted by migrating heirs and sold for low prices to a new order of settlers. The Carolinas and Georgia differ in degree, and it seems only a question of time when the whole American continent shall have been run over by this marauding husbandry. This seems a gloomy view, but it is corroborated by the observation of intelligent foreigners.

In conclusion the speaker said that he had touched hastily only a few of the many topics that this subject and this occasion suggest. But perhaps I have said enough to show the vastness and the importance of the domain, geographical, scientific and economical, that an organization like this should attempt to occupy. I believe, said he, that the addresses of the able gentlemen who have consented to come before us will adduce still more incontrovertible evidence of the fact. I trust the day is not far distant when these annual gatherings, like those of the Agricultural Society of France, shall number their hundreds and thousands of specialists in every department of theoretical and practical agriculture. And when I look upon this vast array of the agricultural products and machinery of our country, supplemented by those of the remotest quarter of the globe, I think that we, who sometimes are half ashamed of our own enthusiasm, do not half comprehend the magnitude and importance of the work in which we are engaged. When the farmers of the world become what we would have them—what the object-lesson of this great Exhibition and the discussions of like gatherings shall make them—we shall enter upon that golden age of equality of rights and duties, which the democratic theory of government necessitates, but which can be only entirely reached through future years of earnest labor on the part of the friends of agriculture. The great work of the next generation, I apprehend, is to give the laboring class its rights of education and thrift, and the mass of this class is made up of the men in whose behalf we have gathered here to-day.

Fruit Show at the Centennial.

The display of fruits which began Sept. 11th, in the annex to the Agricultural Hall, was exceeding large and fine, including large collections from almost every part of the country. The displays from Canada, Iowa, Minnesota and Michigan were wonderful in quantity and appearance. Ohio and California had immense numbers of plates. Massachusetts included large collections of pears from President Wilder and Hovey & Co. Of the Western States, Nebraska and Kansas had fine collections. Not much was shown from Pennsylvania, New York, (except Ellwanger & Barry's fruits and Ricketts' seedling grapes,) or Maryland. John Saul had some 70 kinds of pears from near Washington.

A Useful Invention.—M. Defay has discovered a preparation, by means of which sand-cracks or fractures in hoof or horn may be durably cemented up. Even pieces of iron can be securely joined together by its means. The only precaution necessary for its successful application is the careful removal of all grease by spirits of sal-ammonia, sulphide of carbon, or ether. M. Defay makes no secret of its composition, which is as follows: Take one part of coarsely-powdered gum-ammonia, and two parts of gutta percha in pieces the size of a hazel-nut. Put them in a tin-lined vessel over a slow fire, and stir constantly until thoroughly mixed. Before the thick, resinous mass gets cold, mould it into sticks like sealing-wax. The cement will keep for years, and when required for use it is only necessary to cut off a sufficient quantity and re-melt it immediately before application.—*English Live Stock Journal.*

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9 *North street, near Baltimore street, Baltimore, Md.*
(sign of the Golden Plow.)

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OCTOBER 1, 1876.

Help the "Farmer."

We hope as we near the conclusion of the volume that our friends will not be unmindful of the dependence we place upon them to not only continue the favors the *Farmer* now enjoys at the hands of its subscribers, and that they will exert themselves, so far as their estimate of its merits will allow, to extend its circle of supporters. The present is a good season to begin this work, and the generous help so often and so long extended to us in this direction emboldens us to again solicit the substantial aid of those whose experience with, and confidence in, the *Old Pioneer*, will lead them to commend it to their neighbors and friends.

As has been our custom, to those new subscribers whose names, whether coming single or in clubs, are received before the end of the year, we will send THE LAST THREE NUMBERS OF THE VOLUME GRATIS.

Numbers Wanted.

If any of our subscribers have copies of the June and September issues of the *Farmer* for this year, which they do not care to preserve, we will be very glad to have them mailed to us,—our supply having been exhausted. We will credit persons sending them with two months' subscription for each number received.

Agricultural Fairs.

We are indebted to their officers for invitations to attend the Harford Co., Md.; the York Co., Pa.; the Shenandoah Valley and Piedmont, Va., and other agricultural fairs.

To our Readers.

The steady increase in the circulation of the *American Farmer* in the Southern Atlantic States more remote from its place of publication, has made additional editorial assistance necessary, in order that the needs of the farmers in that quarter may be more fully anticipated and met in the matter offered them in our pages.

With that view we will have in the future the aid of Mr. D. McNeill, of Robeson county, North Carolina, who comes recommended to us as a gentleman of education and character, a successful farmer and an experienced journalist.

We doubt not he will efficiently contribute to make the *Farmer* more than ever useful and welcome in the Carolinas, where it has been fortunate in always having many readers and friends; and, whilst we have no disposition to interfere with those journals already there doing their part of the work in the agricultural field, and the encouragement of which is the first duty of their people, we venture to hope their second choice will fall upon the *American Farmer*, the pioneer in America of agricultural journals, and long a favorite in those parts, with not only the present, but the preceding generation.

Mr. McNeill, in addition to his capacity as Corresponding Editor, will act as our agent in North and South Carolina to receive and forward subscriptions and advertisements for the *Farmer*. Commending him to our friends and the agricultural community in general, we submit below his salutatory.

Farmers and Farming—Our Bow.

In again taking a seat on the tripod, we are actuated by a strong desire to further the interests of the farmers of our native land—"the land we love." We, in the Carolinas and Georgia, have a healthy, temperate climate, and fruitful soil. The Mississippi valley and plains of Texas, though not so salubrious in climate, are of unsurpassed fertility. It is our desire to lay before them the pathway to success; to place in their reach the practical experience of the best farmers; to aid in developing their resources, that their fertile valleys may pour out their hoarded wealth, and their "waste places blossom as the rose." We are a farmer—born and bred on the farm—and know its toils and hardships as well as its triumphs and joys; and in introducing to our people the *American Farmer*, we can truly say, that we have marked it as a model educator—as the exponent of the views of the most advanced agricultural community in our country—for years, and have wished that our people could more generally glean from its rich stores.

Farming, the great leading industry of the country, deserves, in the ratio of its magnitude and importance, to be studied in all its features and practical bearings. Farmers are beginning to look the situation squarely in the face; and to assume their proper place among the callings, professions and pursuits, by co-operation, enquiry, and *actual study*, upon the great matters bearing upon their honorable avocation. They should see to it, that their children are taught to respect the high calling of husbandry, and in no way can this better be done than by giving them a thorough education upon everything bearing upon its intricacies, as well as schooling them to a love of home, the farm and its surroundings, by making them attractive and pleasant. Chemistry, geology and botany, should be opened out to the thorough comprehension of their children, as well as the other studies in the usual course. The homestead should be made the centre of attraction, so that whenever our children may be called in "life's stern bivouac of battle" they may look back to it as the place where the heart is—the place for reunion, happy, quiet, crowning beauty—and liberty, peace and plenty! The farmer, too, should look well to his own improvement. The best literature bearing upon his calling should ever be at hand, that his well-stored and polished mind may fitly fashion his household, acres, houses, orchards and stock, to be things of beauty, and therefore joys forever.

"God speed the plow!"

Robeson Co., N. C. D. McNEILL.

Agricultural Education.

Messrs. Editors American Farmer:

The position taken by Dr. Pendleton, that "manual labor is not, and cannot be made, a legitimate part of a College course," is so manifestly open to adverse criticism that I am not surprised to find Mr. Hansen's ably-argued objections to it in the last issue of the *Farmer*.

If our Agricultural Colleges are to be of that widely-extended and thoroughly practical value which the promoters of these institutions, it is presumed, intended them to be, they must, as Mr. Hansen says, "be established and managed for the benefit of the masses." It is very true that men eminently qualified to teach agricultural science, like Dr. Pendleton, are factors of indispensable moment in promoting sound agricultural progress; but the great question of the day is, not the provision of knowledge for the agricultural community—of that, unhappily, the supply greatly exceeds the demand—but such an apprehension and application of that knowlege by the masses as will lift them above the plane of inherited ignorance, and qualify them to become intelligent exponents of a soundly scientific system of agriculture.

Between the "learned" agriculturists—the production of Agricultural Colleges as Dr. Pendleton would have them conducted—and ninety per cent. at least of agriculturists generally, there is a line of demarkation too broad to permit the passing over of influcnce of any appreciable force. It is not the do this, or do that, that is needed—not the *recipe* but the leaven which the lump of plodding ignorance demands, and that leaven no professors of agricultural science have it within the scope of their mind to supply.

Indeed, and the question is a very pertinent one, are such professors who have never themselves gone through a course of "manual" agriculture, competent to act as guides to the blind? The proposition would seem a self-evident one, that, if Agricultural Colleges are to raise the masses, the leverage being sound agricultural knowledge assimilated by them, the motive power must be found within, and not without, them. In other words the only effective teaching can come from those who have appropriated knowledge, thoroughly tested its value, and who, wherever found, will be not preceptors only but exemplars. We all know the adage "example is better than precept," and it may be confidently asserted that where agriculturists, regarded as a body, are concerned, precept not enforced by example will prove a motive power of inappreciable weight.

But there is another point to be noted which furnishes a very serious objection to the views of Dr. Pendleton. It is beyond question typical of ninety per cent. of the agricultural class to learn *very slowly* when their educators are those between whom and themselves that impalpable, but nevertheless very formidable barrier, a culture *not theirs*, exists. Republican in loud-mouthed theory, as we profess ourselves to be, the chasm gapes very widely between the cultured college professor and "the masses." Clothed as culture too often is with assumption of superiority, it is, no student of human nature needs to be told, irritating and repellent to the uncultured. If agricultural science, therefore, is ever to become a vitalizing power, it must not be propounded only from the chair of the professor, but become a household word among the masses,—a guest *at home*, not an occasional visitor. The only teachers of agricultural science that can take hold of the masses and conduct them onward and upward, must be men of like social affinities with themselves. Such teachers our Agricultural Colleges can and should perennially supply. Were men of this stamp sown broadcast, so to speak, throughout the agricultural community, the beneficial results would surpass the most sanguine anticipations. Through the legitimate operation of a system like this, an impulse would be given to education generally, which in the nature of things would steadily increase in momentum. The deplorable chasm between culture and no culture would become less and less a reproach to our boasted republican progress; the learned in theory would be in hand-touching distance with the learned in practice, and the action and reaction here would be productive of invaluable reciprocal benefit.

This, Messrs. Editors, is but a cursory view of a very important subject. Will not some of your very full corps of able correspondents take up this question and discuss it with that seriousness and in that detail which it so imperatively demands? H. E.

Greenville Co., S. C., Sept., 1876.

Experiments with Fertilizers.

Mr. Wm. Holman, of Virginia, a well-known correspondent of ours, gives, in the *New Jersey Agriculturist*, the following account of experiments made by him:

In seeding my wheat crop last fall, I instituted a series of experiments with the view of testing my theories in the field, and for the benefit of your readers I will give you the result just obtained.

Two and a half acres of fallow were taken as the experimental area, which were divided into five plots of one half acre each, and numbered 1, 2, 3, 4 and 5. On No. 1 no fertilizer was applied. On No. 2 I applied a high-grade fertilizer, carrying five per cent. of ammonia, at the rate of 200 pounds per acre. On No. 3, the same, at the rate of 300 pounds per acre. On No. 4 the same, at the rate of 400 pounds per acre, and on No. 5 the same was applied at the rate of 500 per acre.

The different plots were seeded, cut, threshed and measured separately and with perfect accuracy. The following is the result just obtained:

No. 1, no fertilizer, produced per acre.....	13 bus.
No. 2, 200 lbs. fertilizer, produced per acre.....	19 "
or an increased product of.....	6 "
No. 3, 300 lbs. fertilizer, produced per acre.....	22 "
or an increased product per acre of.....	9 "
No. 4, 400 lbs. fertilizer, produced per acre.....	26 "
or an increased product of.....	13 "
No. 5, 500 lbs. fertilizer, produced per acre.....	30 "
or an increased product of.....	17 "

The following table shows the amount of profit paid by each:

No. 2, 6 bus. increased crop $1.25.....	$ 7.50	
straw, &c.....	1 50—	$ 9.00
less cost of fertilizer.....	6.25	
profit per acre.....	2.75	
No. 3, 9 bus. increased crop $1.25.....	$11.25	
straw, &c.....	2.37—	$13.62
less cost of fertilizer.....	9.38	
profit per acre.....	4.24	
No. 4, 13 bus. increased crop $1.25.....	$16.25	
straw, &c.....	3.25—	$19.50
less cost of fertilizer per acre.....	12.50	
profit per acre.....	7.00	
No. 5, 17 bus. increased crop $1.25.....	$21.25	
straw, &c.....	4.25—	$25.50
less cost of fertilizer.....	15.00	
profit per acre.....	10.50	

The following table shows the profit upon each plot per acre, including the natural yield at $1.25 per bushel.

No. 2. Product, 19 bushels $1.25.....	$23.75	
straw, &c.....	4.00	
	$27.75	
Off cost of seed, labor and fertilizer.....	15.25	
Nett profit.....		$12.50
No. 3. Product, 22 bushels $1.25.....	$27.50	
straw, &c.....	4.75	
	$32.25	
Off cost of seed, labor and fertilizer.....	18.12	
Nett profit.....		$14.13
No. 4. Product, 26 bushels $1.25.....	$32 50	
straw, &c.....	5.75	
	$38.25	
Off cost of seed, labor and fertilizer.....	21.50	
Nett profit.....		$16.75
No. 5. Product, 30 bushels $1.25..	$37.50	
straw, &c.....	6.75	
	$44.25	
Off cost of seed, labor and fertilizer.....	24.00	
Nett profit.....		$20.25

Maryland Day at the Centennial.

The 19th October instant has been chosen for "Maryland Day" at the Centennial. The Governor of the State will hold a reception in the State building, and there will be a great number of our citizens in attendance.

THE LETTER of our South Carolina correspondent H. E. combines such a practical knowledge of the subject with such scholarly treatment that we beg to especially commend it to attention.

SEVERAL COMMUNICATIONS are crowded out of this issue for want of space.

MR. T. S. HUBBARD, Fredonia, N. Y., whose advertisement of grape vines, &c., is found in our advertising columns, sends us his catalogue for the Fall of 1876, containing some very commendatory testimonials to the quality of his nursery products and his satisfactory method of doing business, which are doubtless well deserved. Some vines we ourselves bought of him were of exceedingly fine quality.

FINE GARDEN CORN.—Mr. S. N. Hyde, of Harford county, Md., recently kindly sent us a mess of a sugar corn grown by him, which he calls "Egyptian." For size and sweetness it surpasses any variety we have ever tried, and its value may be estimated from the fact that Mr. H. sells all he can deliver to one restaurant in this city at 50 cents per dozen ears the season through. Heretofore Mr. Hyde has retained all the seed he saved, but next season he intends offering it for sale. We have no hesitation in pronouncing it an acquisition of value to our gardens.

A GRAPE FENCE.—A Massachusetts lady, writing to the *New Jersey Farmer*, says: It would delight your eyes to see our grape *fence*. Grape vines were planted, six feet apart, by myself on the sunny side of a six-feet-high board fence, and allowed to grow and fall over the other side quite to the ground. This fence is now a perfect mass of fruit on *both sides*, and I find my bees enjoy the fruit, and the bee stings on the fruit attracts the birds. However, we all have enough. It is just splendid.

HOG CHOLERA REMEDY.—Mr. Wm. of Vance, Henry county, one of our best Kentucky farmers, and most successful stock feeders, gives us the following recipe for hog cholera, which he says never failed to effect a cure with him and recommends the use of hypo-sulphite of soda as a preventive even when hogs are well: Hypo-sulphite of soda, one pound. Bicarbonate of soda, one pound. Copperas, one-half pound. Pulverized ginger, one-fourth pound. May apple root, powdered, one-fourth pound. Dissolve in two gallons of warm water. For every six hogs give one quart of the mixture in slop.—*Wallace's Monthly.*

[For the American Farmer.]

Centennial Pictures—No. 2.

BY JANE BOSWELL MOORE BRISTOR.

After four weeks in Philadelphia, visiting the Exposition almost daily, I would advise those who do not wish to be wholly discouraged, not to begin with the main building. I heard many say with regret, this had been their course. They were so "carried away" with its extent and variety, that when they had no more time to spend, many objects of great interest elsewhere had to be left unseen. Of course if you have abundant leisure, you could spend weeks in this one building; its different avenues and aisles extend over thirty-five miles; it would hold half the population of Philadelphia, and is the longest hall of the same width ever attempted. Five minutes spent over each object in the Centennial would require a life-time of sixty years; yet how much toil, patient research, experiment, and close observation, have been given to them! Over one exhibit, are the words: "He who knows not what it is to labor, knows not what it is to enjoy." The world's workers, not its drones, are here represented; and the sight should inspire all, especially the young, with determined purpose to make life useful to others, to leave behind them some noble work, undertaken and finished, which more eloquently than bronze or marble will tell the story of unselfish thought and deed. One thing naturally surprises: with so many superior articles of our own, why prefer and encourage importations? In the Arkansas State building is a counter covered with minerals, made of thirty-six different kinds of native woods, some of them exceedingly beautiful. The white holly grows sixty and seventy feet high; corn-stalks here are nearly eighteen feet in height, and wheat nearly five, oats seven.

Having heard much of the display of Hungarian opals, a favorite stone with me, I inquired for them with interest, the Commissioner being polite enough to open the case, in which they are not very perfectly seen. The largest one in the world is here, weighing six hundred and two carats, and costing twenty-five thousand dollars; besides views of the mines, pieces of opal "Vern," and portraits of the Emperor and Empress of Austria, cut on opal, after two years toil. To my taste, of all precious stones, the opal is the most delicately beautiful.

I make it a habit when in New York, to go to to the house of Fox, on Maiden Lane, that I may feast my eyes with late importations. Pondrous iron safes against the walls are filled with drawers or trays, within which are tiny paper parcels, lined with black silk, on which, when opened, precious stones sparkle. To those who have not seen fine opals, I can only describe them as soft but brilliant fragments of many-tinted rainbows, gleaming in sheets of pink, gold, pale straw color, heavenly blue, violet, glowing red, deep sunset hues, and changeful green. Turn them over and over, they reflect more and more beauty, now one-half of the prism before us is of the most vivid green, the central spot violet, the rest leaping flame, liquid moving fire. The first tints of spring's bursting leaves are not more delicate than the green which dances on this smooth surface. It is a quivering globule, with waves of green, blue, gold and amber, flakes and mosaics of color, blended in marvellous radiance. But I was disappointed in this koh-i-noor of opals. It may be that it is only remarkable for its great size, and not its rare color, or possibly needs cutting at the hands of a skilled lapidary; but I did not enjoy it as I expected.

At the extreme southeastern end of the main building is the book department, with curious collections of old Bibles, a pocket one having belonged to John Milton. A stairway leads to a raised gallery or pavilion above, commanding a fine view of the aisles, with their imposing display and flags of all nations. Here are the Harding Bibles, magnificently bound in satin-lined cases. An immense patent chain-back photograph album has space for one thousand photographs. The great weight of such a book could only be sustained by the Harding chain-back. The spectographic album has a lens which folds inside of the cover; the outline of pictures being reflected on the surface of a slate or paper, so that the reflected object can be drawn with ease. The crown quarto Bibles are novelties, in clear type, with full marginal references, illustrations by Doré, Bible dictionary, history, and inlaid monograms. This is the oldest Bible-publishing house in America, having sent forth millions of Bibles; it is also the only one in the country in which the paper used, (of excellent quality,) as well as the card board, are manufactured, printed, and bound, in the various departments of the same house.

In the Japanese and Chinese sections, carved furniture is a specialty. Over that bedstead, twenty skilled workmen were employed three years. How many life-times have been wasted over these articles; but as some one observed, these people do not think much of time. Their vases, china, and pottery, are very curious.

Italy has two tables on which ancient cathedrals are inlaid in mother of pearl and papier maché. That of Milan is exquisitely beautiful; the moonlight from drifted clouds above falls on the side and door of the venerable Gothic pile, leaving the rest in solemn shadow. Black tables are bordered by flowers in brilliant mosaic.

Mexico has a solid lump of silver worth seventy-two thousand dollars. To come into possession of it would work a change in your character or mine, probably, which might not be for the better; so let us tranquilly look at it and pass on.

In this case are seven volumes, the work of a brain which the solid lump aforesaid could not buy. When completed, it will form a "Dictionary of books relating to America, from its discovery to the present time," by Joseph Sabine, editor of the "Bibliopolist." The labor implied in compiling such a work cannot be estimated, and its value to the student is great. The num-

ber of titles already described is forty thousand, not including the various editions, nor titles of books of secondary interest, which are printed in small type and would more than double the present number. Such a book, of course, cannot aim at large circulation,—being for the historian, collector and librarian,—but it is gratifying to know that quite a number of copies have been taken in Baltimore and Virginia. Frederick Muller, an eminent bibliographer of Amsterdam, said: "I am proud to be a bookseller, seeing a bookseller has made such a book." The plan includes an alphabetical list of all books published here or abroad that have any reference to the history of America, including catalogues of all the public and many private libraries of this country, which pertain to the subject. It took the author two years steady labor to arrange the titles in alphabetical order. Such a national monument is appropriately placed in the Centennial.

The great Corliss engine, in Machinery Hall, is the largest stationary one ever built; it drives eight main lines of shafting almost the entire length of the building, which covers fourteen acres,—counter shafts being introduced in the aisles when needed. The hangers are attached at the height of twenty feet from the floor.—Twenty months before it was a mass of iron ore, put together here for the first time, the measurement of some of the fine parts being as close as the one-hundredth part of an inch. Near it is one of four large enclosures granted to the Howe Scales, one hundred and fifty kinds being made by the firm, from a post-office balance to those which weigh three hundred thousand pounds.—Crowds are attracted to the Fay machines for cutting and carving wood for practical purposes. There are one hundred and seventy-nine varieties. This armor plate, cut from one weighing over one hundred tons, was made for the Italian Government, to be tested by an hundred ton Armstrong gun,—the weight of the shot of the gun being nearly a ton, with a charge of powder of three hundred and thirty pounds. The main annex is appropriated to carriages, Lesley Gothic furnaces, Zero refrigerators, said to be the most economical in use, Polaris and Newport coolers, Pullman palace cars, and household devices and inventions from tiny nonpareil corn-graters to much larger and more complicated articles. The old colonial bell from Dover, Delaware, hung in its tower some time between sixteen hundred and ninety and seventeen hundred, stands surrounded by modern improvements, a small instrument for soldering cans, patented in June of this year, fastening the ends of one hundred cans per minute; and a great standing wall, not of brick or stone, but cans of American condensed milk of the excellent Alderney brand, a result achieved after years of toil, experiment, and discouragement.

Newell's "Old Landmarks and Relics of Philadelphia,"—a series of pocket photographs—give much useful information to a stranger in the city. From them we learn that on Arch street, now number two hundred and thirty-nine, between Second and Third streets, the house is still standing in which Washington and several members of Congress went to Mrs. Ross with the design of the first American flag. Mrs. Ross showed Washington that five-pointed stars would be much more symmetrical and pleasing to the eye than the six-pointed ones that were in the first design. She had the flag ready next day, and was for years the Government manufacturer,—her daughter voluntarily giving up the business on becoming a Friend, lest her work should be used in time of war. There are few more interesting spots than the old Swedes church and graveyard.

In my last I spoke of the California tree as one of the few side exhibitions worth visiting. A very instructive and admirable one is the cyclorama of the siege of Paris, very near the main building, but outside of the grounds. It is the work of thirty French artists, and brings the siege, with its surroundings, vividly before you.

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